CH2M HILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833-2937
Tel 916.920.0300
Fax 916.920.8463

CH2MHILL

May 5, 2003

Ms. Kristy Chew
Siting Project Manager
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814

RE: Data Responses, Set 1Q
Cosumnes Power Plant (01-AFC-19)

On behalf of the Sacramento Municipal Utility District, please find attached 12 copies and one original of Data Responses, Set 1Q, in response to Staff's Data Requests dated December 10, 2001.

Please call me if you have any questions.

Sincerely,

CH2M HILL

John L. Carrier, J.D.
Program Manager

c: Colin Taylor/SMUD
Kevin Hudson/SMUD
Steve Cohn/SMUD

COSUMNES POWER PLANT (01-AFC-19)

DATA RESPONSE, SET 1Q

(Responses to Data Requests: 16 and 148)

Submitted by

SACRAMENTO MUNICIPAL UTILITY DISTRICT (SMUD)

May 5, 2003

CH2MHILL

2485 Natomas Park Drive, Suite 600
Sacramento, California 95833-2937

Technical Area: Biological Resources
CEC Authors: Melinda Dorin and Rick York
CPP Author: EJ Koford and Debra Crowe

BACKGROUND

A proposed table of contents of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) is supplied in Appendix 8.2D. In the proposed outline Section 4.4, Wetland Protections, there are subsections that do not correspond to that heading, i.e. Sections 4.4.6 through 4.4.8.

DATA REQUEST

16. Please provide a draft BRMIMP with the following additional sections and include any information in the sections such as impact avoidance measures and proposed mitigation where appropriate.

    - Regional Setting describing all habitats that may be impacted;
    - Biological Resources to be impacted (by species);
    - Construction schedule;
    - Under the existing heading for Mitigation Measures for Sensitive Biological Resources, include subsections that address the proposed species specific mitigation and avoidance measures, for species such as (but not limited to) Swainson's hawks, Western burrowing owls, and anadramous fish species.
    - Habitat compensation measures to mitigate for habitat loss;
    - Move the Habitat Revegetation Plan (4.4.8) to a separate section;
    - Add a section for pre-construction and post-construction aerial photos of the project area at a 1" to 100' scale; and
    - Agency agreements and permits.

    Response: A revised draft BRMIMP is presented as Attachment BR-16B.

Technical Area: Water and Soil Resources
CEC Authors: Philip Lowe, P.E., Greg Peterson, P.E., & Richard Latteri
CPP Author: EJ Koford and Debra Crowe

BACKGROUND

Section 8.14.5.1 of the AFC describes impacts to three tributaries to Clay Creek and states that these drainageways are probably jurisdictional under Section 404 of the Clean Water Act. The AFC states that a 404 Permit will be required (as well as 401 Water Quality Certification) and that an environmental assessment will be performed and mitigation measures developed as a condition of obtaining these permits. The AFC describes how the proposed gas pipeline will cross a number of streams which are probably jurisdictional.

DATA REQUEST

148. Please provide evidence of consultation with the USCOE, RWQCB, and CDFG regarding the proposed riparian disturbance. Evidence of consultation should include applications for a 404 Permit, 401 Water Quality Certification, and a California Fish and Game Code 1601 Streambed Alteration Agreement.

    Response: A copy of the Section 404 permit application was sent to the Army Corps of Engineers on April 23, 2003. A copy of the text portion of that application is provided as Attachment W&SR-148A. The wetland figures that were included in the Section 404 permit application are not included in this filing due to their size. (However, copies will be furnished to the parties upon request.)

    In addition we are providing a copy of the Section 404(b) alternatives analysis as Attachment W&SR-148B.

INSERT

Attachment BR-16B, Revised Draft BRMIMP

P.O. Box 15830, Sacramento, CA 95852-1830; 1-888-742-SMUD (7683)

April 23, 2003
CPP03-182

Mr. Justin Cutler
Army Corps of Engineers
Regulatory Branch
1325 J. Street
Sacramento, CA 95814

Re: Section 404 CWA and Section 10 Rivers and Harbors Act Revised Application for Cosumnes Power Plant, Sacramento County, CA (Ref 200100710)

Dear Mr. Cutler:

The Sacramento Municipal Utility District (SMUD) has assigned Kleinschmidt Huffman-Broadway, Inc. (KHB) to work with the Corps on its Cosumnes Power Project. Enclosed is a revised permit application naming Dr. Terry Huffman as SMUD's agent for purposes of the Corps permit. We request that you accept this application in lieu of the one previously submitted on March 10, 2003. The project purpose in Block 19 has been made more specific, and the list of certifications in Block 25 reflects that we are seeking USFWS/NMFS ESA incidental take statements, rather than incidental take permits. Note that the attached content to the permit remains unchanged. Dr. Huffman will be in contact with you in the near future to determine if you need any additional materials to complete the Public Notice for this project.

As before, this package includes a completed application form (ENG FORM 4345); tables summarizing wetlands and impact areas and landowners information; and maps showing confirmed wetland boundaries and construction corridors in the CPP project area. Also as

before, there is the potential condition that authorization under Section 10 is required for the HDD crossing of the Cosumnes River that will take place in the late summer months.

Thank you for you assistance and continued attention to this matter. In the meantime, please do not hesitate to call me at (916) 732-7101 or Dr. Huffman at (415) 925-2000.

Sincerely,

Kevin M. Hudson
Licensing Manager
Cosumnes Power Plant

cc: Mike Finan/ACOE
Colin Taylor/SMUD
Terry Huffman/Kleinschmidt, Huffman-Broadway, Inc.
Kristy Chew/CEC

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT (33 CFR 325)

OMB APPROVAL NO. 0710-003

PRIVACY ACT STATEMENT

Authority: 33 USC 401, Section 10; 1413, Section 404. Principal Purpose: These laws require permits authorizing activities in, or affecting, navigable waters of the United States; the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Routine uses: Information provided on this form will be used in evaluating the application for a permit. Disclosure: Disclosure of requested information is voluntary. If information is not provided, however, the permit application cannot be processed nor can a permit be issued.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME & TITLE (an agent is not required)
Colin Taylor, P.E.	Terry Huffman, Ph.D.
6. APPLICANT'S ADDRESS Sacramento Municipal Utilities District 6201 S Street Sacramento, CA 95817	9. AGENT'S ADDRESS Kleinschmidt Huffman-Broadway, Inc. 700 Larkspur Landing Circle, Suite 100 Larkspur, CA 94939
7. APPLICANT'S PHONE NUMBERS WITH AREA CODE a. Residence --- b. Business 916 732-6724	10. AGENT'S PHONE NUMBERS WITH AREA CODE a. Residence --- b. Business 415 925-2000

STATEMENT OF AUTHORIZATION

11.

I hereby authorize Dr. Terry Huffman to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

Kevin M. Hudson for Colin Taylor — APPLICANT'S SIGNATURE

April 23, 2003 — DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

Cosumnes Power Plant and Natural Gas Supply Pipeline

13. NAME OF WATERBODY, IF KNOWN (if applicable)

See attached maps

14. PROJECT STREET ADDRESS (if applicable)

Sacramento Municipal Utilities District
14295 East Clay Road
Herald, CA 95638

15. LOCATION OF PROJECT

Sacramento (COUNTY) CA (STATE)

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

Carson Energy Group (Gas Cogeneration Plant), 8580 Laguna Station Road, Sacramento, CA

17. DIRECTIONS TO THE SITE

From Sacramento: South on Hwy 99 - 20.7 miles; East on Hwy 104 - 8.8 miles; East on Clay East Road - 2.2 miles

18. NATURE OF ACTIVITY (Description of project, include all features)

SMUD proposes to develop a natural gas-fired generating facility [Cosumnes Power Plant (CPP)] on a 30-acre parcel within their 2,480-acre property where the former Rancho Seco (RS) nuclear plant is located. Other project features include: a 0.2-mile water supply pipeline from existing pump station; a 0.3-mile overhead transmission line to existing RS 230kV swithchyard; a 0.62-mile access road from eastern end of Clay East Road; a 26-mile natural gas supply pipeline from Carson Cogen Facility; and a 20-acre laydown area immediately south of the proposed CPP site.

19. PROJECT PURPOSE (Describe the reason or purpose of the project, see instructions)

The overall project purpose is restore the electric generating capacity at SMUD's Rancho Seco facility to provide additional generation and critically needed voltage support using existing or nearby critical infrastructure (e.g., the existing switchyard and appropriately sized water conveyance and storage facilities and transmission lines with unused capacity) by constructing a gas generating facility to serve impending electricity load needs from within the SMUD service area.

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. REASON(S) FOR DISCHARGE

Discharge of fill will occur at the plant site to construct the compacted, earthen pad upon which the generating facility will be built. Additional discharge of fill will occur in wetlands within the laydown area to create a smooth, stable surface suitable for storing building materials and accepting routine construction traffic. The impacts to wetlands along the natural gas supply pipeline will be temporary because the ground surface will be restored to original contours after installation of the pipe.

21. TYPE(S) OF MATERIAL BEING DISCHARGED AND THE AMOUNT OF EACH TYPE IN CUBIC YARDS

Project Site: 4,336 cu. yds. of structural fill (well-graded materials) with suitable compaction and load-bearing properties
Laydown Area: 2,713 cu. yds. of soil graded from local sources and approximately 800 cu. yds. of gravel to protect the ground surface of the laydown area.
(Note: fill volumes in wetlands were determined electronically from topographic terrain model and proposed grading plans)

22. SURFACE AREA IN ACRES OF WETLANDS OR OTHER WATERS FILLED (see instructions)

See attached Table 1 for details. Summary as follows:
Temporary Impacts along natural gas pipeline - 1.749 acres; Temporary Impacts at CPP site - 1.172 acres; Permanent Impacts at CPP site and Laydown Area - 1.329 acres

23. IS ANY PORTION OF THE WORK ALREADY COMPLETE? YES ○ NO ◉ IF YES, DESCRIBE THE WORK

24. ADDRESSES OF ADJOINING PROPERTY OWNERS, LESSEES, ETC. WHOSE PROPERTY ADJOINS THE WATERBODY (If more than can be entered here, please attach a supplemental list)

See Table 2

25. LIST OF OTHER CERTIFICATIONS OR APPROVALS/DENIALS RECEIVED FROM OTHER FEDERAL, STATE, OR LOCAL AGENCIES FOR WORK DESCRIBED IN THIS APPLICATION

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
CEC	Application for Certification	01-AFC-019	October 2001	Pending	NA
CDFG	Streambed Alteration Agreement	R2-2002-246 & -386	September 2002	October 2002	NA
USFWS	ESA Incidental Take Statement	NA	February 28, 2003	Pending	NA
NMFS	ESA Incidental Take Statement	NA	February 28, 2003	Pending	NA

* Would include but is not restricted to zoning, building and flood plain permits.

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

Kevin M. Hecht for C.T. — April 23, 2003 — _____ — _____

SIGNATURE OF APPLICANT | DATE | SIGNATURE OF AGENT | DATE

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.
18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and will fully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, facticious, or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

Instructions For Preparing A
Department of the Army Permit Application

Blocks 1 thru 4 - To be completed by Corps of Engineers.

Block 5 - APPLICANT'S NAME. Enter the name of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the responsible officer and title. If more than one party is associated with the application, please attach a sheet with the necessary information marked "Block 5".

Block 6 - ADDRESS OF APPLICANT. Please provide the full address of the party or parties responsible for the application. If more space is needed, attach an extra sheet of paper marked "Block 6".

Block 7 - APPLICANT PHONE NUMBERS. Please provide the number where you can usually be reached during normal business hours.

Block 8 - AUTHORIZED AGENT'S NAME AND TITLE. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer or any other person or organization. Note: An agent is not required.

Blocks 9 and 10 - AGENT'S ADDRESS AND TELEPHONE NUMBER. Please provide the complete mailing address of the agent, along with the telephone number where he/she can be reached during normal business hours.

Block 11 - STATEMENT OF AUTHORIZATION. To be completed by applicant if an agent is to be employed.

Block 12 - PROPOSED PROJECT NAME OR TITLE. Please provide name identifying the proposed project (i.e., Landmark Plaza, Burned Hills Subdivision, or Edsall Commercial Center).

Block 13 - NAME OF WATERBODY. Please provide the name of any stream, lake, marsh, or other waterway to be directly impacted by the activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 14 - PROPOSED PROJECT STREET ADDRESS. If the proposed project is located at a site having a street address (not a box number), please enter it here.

Block 15 - LOCATION OF PROPOSED PROJECT. Enter the county and state where the proposed project is located. If more space is required, please attach a sheet with the necessary information marked "Block 15".

Block 16 - OTHER LOCATION DESCRIPTIONS. If available, provide the Section, Township, and Range of the site and/or the latitude and longitude. You may also provide a description of the proposed project location, such as lot numbers or tract numbers. You may choose to locate the proposed project site from a known point (such as the right descending bank of Smith Creek, one mile down from the Highway 14 Bridge). If a large river or stream, include the river mile of the proposed project site, if known.

Block 17 - DIRECTIONS TO THE SITE. Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site.

Block 18 - NATURE OF ACTIVITY. Describe the overall activity or project. Give approximate dimensions of structures such as wingwalls, dikes, (identify the materials to be used in construction, as well as the methods by which the work is to be done), or excavations (length, width, and height). Indicate whether discharge of dredged or fill material is involved. Also, identify any structure to be constructed on a fill, piles, or float-supported platforms.

The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked "Block 18".

Block 19 - PROPOSED PROJECT PURPOSE. Describe the purpose and need for the proposed project. What will it be used for and why? Also include a brief description of any related activities to be developed as the result of the proposed project. Give the approximate dates you plan to both begin and complete all work.

Block 20 - REASONS FOR DISCHARGE. If the activity involves the discharge of dredged and/or fill material into a wetland or other waterbody, including the temporary placement of material, explain the specific purpose of the placement of the material (such as erosion control).

Instructions For Preparing A
Department of the Army Permit Application

Block 21 - TYPES OF MATERIAL BEING DISCHARGED AND THE AMOUNT OF EACH TYPE IN CUBIC YARDS. Describe the material to be discharged and amount of each material to be discharged within Corps jurisdiction. Please be sure this description will agree with your illustrations. Discharge material includes: rock, sand, clay, concrete, etc.

Block 22 - SURFACE AREAS OF WETLANDS OR OTHER WATERS FILLED. Describe the area to be filled at each location. Specifically identify the surface areas, or part thereof, to be filled. Also include the means by which the discharge is to be done (backhoe, dragline, etc.). If dredged material is to be discharged on an upland site, identify the site and the steps to be taken (if necessary) to prevent runoff from the dredged material back into a waterbody. If more space is needed, attach an extra sheet of paper marked "Block 22".

Block 23 - IS ANY PORTION OF THE WORK ALREADY COMPLETE? Provide any background on any part of the proposed project already completed. Describe the area already developed, structures completed, any dredged or fill material already discharged, the type of material, volume in cubic yards, acres filled, if a wetland or other waterbody (in acres or square feet). If the work was done under an existing Corps permit, identify the authorization if possible.

Block 24 - NAMES AND ADDRESSES OF ADJOINING PROPERTY OWNERS, LESSEES, etc., WHOSE PROPERTY ADJOINS THE PROJECT SITE. List complete names and full mailing addresses of the adjacent property owners (public and private) lessees, etc., whose property adjoins the waterbody or aquatic site where the work is being proposed so that they may be notified of the proposed activity (usually by public notice). If more space is needed, attach an extra sheet of paper marked "Block 24".

Block 25 - INFORMATION ABOUT APPROVALS OR DENIALS BY OTHER AGENCIES. You may need the approval of other Federal, State, or Local agencies for your project. Identify any applications you have submitted and the status, if any (approved or denied) of each application. You need not have obtained all other permits before applying for a Corps permit.

Block 26 - SIGNATURE OF APPLICANT OR AGENT. The application must be signed by the owner or other authorized party (agent). This signature shall be an affirmation that the party applying for the permit possesses the requisite property rights to undertake the activity applied for (including compliance with special conditions, mitigation, etc.).

DRAWINGS AND ILLUSTRATIONS - GENERAL INFORMATION

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map, a Plan View, or a Typical Cross-Section Map. Identify each illustration with a figure or attachment number.

Please submit one original, or good quality copy, of all drawings on an 8.5 X 11 inch plain white paper (tracing paper or film may be substituted). Use the fewest number of sheets necessary for your drawings or illustrations.

Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross-section). While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate and contain all necessary information.

Table 1. Summary of Wetland Surface Areas and Areas of Construction Impacts

Cosumnes Power Plant Project, Sacramento Municipal Utilities District

Location Designation	Habitat Type[1]	Acres Within Survey Boundary[2]	Acres Within Construction Zone	Source
Natural Gas Pipeline Alignment[3]				
001-SW	Seasonal Wetland	0.069	0.000	CH2M HILL, 2003
002-SW	Seasonal Wetland	0.113	0.000	CH2M HILL, 2003
003-DD	Drainage Ditch	0.166	0.017	CH2M HILL, 2003
004-SW	Seasonal Wetland	0.076	0.000	CH2M HILL, 2003
005-PF	Ponded Feature	0.022	0.000	CH2M HILL, 2003
006-DD (WUS)	Drainage Ditch	3.032	0.000	CH2M HILL, 2003
007-SW	Seasonal Wetland	0.066	0.066	CH2M HILL, 2003
008-SW	Seasonal Wetland	0.232	0.232	CH2M HILL, 2003
009-SW	Seasonal Wetland	0.043	0.042	CH2M HILL, 2003
010-SW	Seasonal Wetland	0.160	0.160	CH2M HILL, 2003
011-SW	Seasonal Wetland	0.028	0.000	CH2M HILL, 2003
012-SW	Seasonal Wetland	0.188	0.000	CH2M HILL, 2003
013-SW	Seasonal Wetland	0.028	0.000	CH2M HILL, 2003
014-SW	Seasonal Wetland	0.072	0.000	CH2M HILL, 2003
015-FM	Freshwater Marsh	0.384	0.106	CH2M HILL, 2003
016-DD (WUS)	Drainage Ditch	0.868	0.138	CH2M HILL, 2003
017-PD	Pond	0.383	0.331	CH2M HILL, 2003
018-DD	Drainage Ditch	0.021	0.000	CH2M HILL, 2003
019A-SW	Seasonal Wetland	0.021	0.021	CH2M HILL, 2003
019B-SW	Seasonal Wetland	0.004	0.004	CH2M HILL, 2003
019C-SW	Seasonal Wetland	0.005	0.005	CH2M HILL, 2003
019-DD	Drainage Ditch	0.502	0.000	CH2M HILL, 2003
020-DD	Drainage Ditch	0.315	0.000	CH2M HILL, 2003
021A-SW	Seasonal Wetland	0.932	0.333	CH2M HILL, 2003
021-DD	Drainage Ditch	0.141	0.000	CH2M HILL, 2003
022A-SW	Seasonal Wetland	0.016	0.016	CH2M HILL, 2003
022-DD	Drainage Ditch	1.542	0.016	CH2M HILL, 2003
023-DD	Drainage Ditch	0.168	0.029	CH2M HILL, 2003
024-DD	Drainage Ditch	0.201	0.033	CH2M HILL, 2003
025-SW	Seasonal Wetland	0.070	0.000	CH2M HILL, 2003
026-SW	Seasonal Wetland	0.048	0.000	CH2M HILL, 2003
027-DD	Drainage Ditch	0.585	0.017	CH2M HILL, 2003
028-DD	Drainage Ditch	0.278	0.000	CH2M HILL, 2003
029-DD	Drainage Ditch	0.055	0.016	CH2M HILL, 2003
030-DD (WUS)	Drainage Ditch	1.393	0.037	CH2M HILL, 2003
031-DD	Drainage Ditch	0.082	0.000	CH2M HILL, 2003
032-PF	Ponded Feature	0.062	0.000	CH2M HILL, 2003
033-DD	Drainage Ditch	0.106	0.040	CH2M HILL, 2003
034-DD	Drainage Ditch	0.505	0.000	CH2M HILL, 2003
035-DD	Drainage Ditch	0.014	0.000	CH2M HILL, 2003
036-DD	Drainage Ditch	0.361	0.005	CH2M HILL, 2003
037-PF	Ponded Feature	0.177	0.091	CH2M HILL, 2003
038-DD	Drainage Ditch	0.512	0.084	CH2M HILL, 2003
039-DD	Drainage Ditch	0.101	0.017	CH2M HILL, 2003
040-DD	Drainage Ditch	1.172	0.000	CH2M HILL, 2003
042-DD	Drainage Ditch	0.900	0.000	CH2M HILL, 2003
043-DD	Drainage Ditch	0.022	0.008	CH2M HILL, 2003
044-CP (WUS)	Perennial Creek	0.345	0.000	CH2M HILL, 2003
045-SW	Seasonal Wetland	0.450	0.212	CH2M HILL, 2003
047-DD	Drainage Ditch	0.057	0.020	CH2M HILL, 2003
048-DD	Drainage Ditch	1.462	0.022	CH2M HILL, 2003
050-DD	Drainage Ditch	0.449	0.000	CH2M HILL, 2003
052-DD	Drainage Ditch	0.396	0.315	CH2M HILL, 2003
053-DD	Drainage Ditch	0.259	0.226	CH2M HILL, 2003
054-DD	Drainage Ditch	0.707	0.632	CH2M HILL, 2003
055-DD	Drainage Ditch	0.477	0.050	CH2M HILL, 2003
056-FM	Freshwater Marsh	1.338	0.000	CH2M HILL, 2003

058-DD	*Drainage Ditch*	*0.031*	*0.000*	*CH2M HILL, 2003*
059-RW	***Riparian Willow Scrub***	***1.827***	***0.000***	***CH2M HILL, 2003***
060-RV (WUS)	***River, Cosumnes***	***0.642***	***0.000***	***CH2M HILL, 2003***
061-RW	***Riparian Willow Scrub***	***0.715***	***0.000***	***CH2M HILL, 2003***
063-DD	***Drainage Ditch***	***0.234***	***0.000***	***CH2M HILL, 2003***
064-DD	*Drainage Ditch*	*0.062*	*0.000*	*CH2M HILL, 2003*
065-DD	*Drainage Ditch*	*0.028*	*0.000*	*CH2M HILL, 2003*
066-CP (WUS)	***Perennial Creek***	***0.522***	***0.000***	***CH2M HILL, 2003***
067-DD	Drainage Ditch	0.024	0.006	CH2M HILL, 2003
069-DD	Drainage Ditch	0.028	0.009	CH2M HILL, 2003
071-SW	**Seasonal Wetland**	**1.489**	**0.004**	**CH2M HILL, 2003**
072-SW	***Seasonal Wetland***	***0.653***	***0.000***	***CH2M HILL, 2003***
073-DD	Drainage Ditch	0.140	0.140	CH2M HILL, 2003
074-SW	***Seasonal Wetland***	***0.092***	***0.000***	***CH2M HILL, 2003***
075-DD	Drainage Ditch	0.188	0.185	CH2M HILL, 2003
076-DD	Drainage Ditch	0.040	0.028	CH2M HILL, 2003
077-VP	***Vernal Pool***	***0.116***	***0.000***	***CH2M HILL, 2003***
078-DD	Drainage Ditch	0.008	0.008	CH2M HILL, 2003
079-DD	*Drainage Ditch*	*0.036*	*0.000*	*CH2M HILL, 2003*
080-VP	***Vernal Pool***	***0.431***	***0.000***	***CH2M HILL, 2003***
081-SW	***Seasonal Wetland***	***0.490***	***0.000***	***CH2M HILL, 2003***
082-DD	***Drainage Ditch***	***0.037***	***0.000***	***CH2M HILL, 2003***
083-DD	Drainage Ditch	0.180	0.139	CH2M HILL, 2003
084-DD	Drainage Ditch	0.151	0.046	CH2M HILL, 2003
085-VP	***Vernal Pool***	***0.042***	***0.000***	***CH2M HILL, 2003***
086-VP	***Vernal Pool***	***0.029***	***0.000***	***CH2M HILL, 2003***
088-DD	Drainage Ditch	0.265	0.226	CH2M HILL, 2003
089-SS	**Seasonal Swale**	**0.064**	**0.023**	**CH2M HILL, 2003**
090-SS (incls. 091-SS & 092-SS)	**Seasonal Swale**	**0.524**	**0.162**	**CH2M HILL, 2003**
094-DD	Drainage Ditch	0.021	0.015	CH2M HILL, 2003
095-DD	Drainage Ditch	0.167	0.158	CH2M HILL, 2003
096-DD	Drainage Ditch	0.015	0.015	CH2M HILL, 2003
097-CP (WUS)	**Perennial Creek**	**0.270**	**0.013**	**CH2M HILL, 2003**
098-DD	**Drainage Ditch**	**0.247**	**0.170**	**CH2M HILL, 2003**
099-DD	**Drainage Ditch**	**0.021**	**0.004**	**CH2M HILL, 2003**
100-DD	*Drainage Ditch*	*0.008*	*0.000*	*CH2M HILL, 2003*
101-DD	*Drainage Ditch*	*0.266*	*0.000*	*CH2M HILL, 2003*
102-DD	Drainage Ditch	0.135	0.122	CH2M HILL, 2003
103-DD	Drainage Ditch	0.195	0.007	CH2M HILL, 2003
104-DD	Drainage Ditch	0.431	0.239	CH2M HILL, 2003
107-DD	**Drainage Ditch**	**0.098**	**0.012**	**CH2M HILL, 2003**
108-DD	*Drainage Ditch*	*0.002*	*0.000*	*CH2M HILL, 2003*
109-DD	Drainage Ditch	0.008	0.004	CH2M HILL, 2003
111-DD	Drainage Ditch	0.069	0.044	CH2M HILL, 2003
112-DD	Drainage Ditch	0.128	0.002	CH2M HILL, 2003
113-DD	Drainage Ditch	0.070	0.017	CH2M HILL, 2003
115-DD	*Drainage Ditch*	*0.064*	*0.000*	*CH2M HILL, 2003*
116-DD	*Drainage Ditch*	*0.140*	*0.000*	*CH2M HILL, 2003*
118-DD	*Drainage Ditch*	*0.194*	*0.000*	*CH2M HILL, 2003*
119-PD	*Pond*	*0.188*	*0.000*	*CH2M HILL, 2003*
120-FM	***Freshwater Marsh***	***0.588***	***0.000***	***CH2M HILL, 2003***
122-CP (WUS)	***Perennial Creek***	***0.740***	***0.000***	***CH2M HILL, 2003***
125-CS (WUS)	***Seasonal Creek***	***0.272***	***0.000***	***CH2M HILL, 2003***
126-SW	***Seasonal Wetland***	***0.004***	***0.000***	***CH2M HILL, 2003***
127-SW	***Seasonal Wetland***	***0.107***	***0.000***	***CH2M HILL, 2003***
128-SS	*Seasonal Swale*	*0.059*	*0.000*	*CH2M HILL, 2003*
130-SS	Seasonal Swale	0.154	0.013	CH2M HILL, 2003
131-PF	Ponded Feature	0.080	0.058	CH2M HILL, 2003
132-DD	Drainage Ditch	0.050	0.014	CH2M HILL, 2003
132-PD	*Pond*	*0.235*	*0.000*	*CH2M HILL, 2003*
133-DD	Drainage Ditch	0.004	0.003	CH2M HILL, 2003
134-DD	Drainage Ditch	0.004	0.003	CH2M HILL, 2003
135-DD	Drainage Ditch	0.007	0.005	CH2M HILL, 2003
136-PF	Ponded Feature	0.005	0.005	CH2M HILL, 2003
137-DD	Drainage Ditch	0.009	0.006	CH2M HILL, 2003
138-PF	**Ponded Feature**	**0.023**	**0.011**	**CH2M HILL, 2003**

139-PF	Ponded Feature	0.026	0.026	CH2M HILL, 2003
140-PF	Ponded Feature	0.057	0.053	CH2M HILL, 2003
141-PF	Ponded Feature	0.021	0.020	CH2M HILL, 2003
142-PF	Ponded Feature	0.010	0.010	CH2M HILL, 2003
143-PF	Ponded Feature	0.050	0.046	CH2M HILL, 2003
144-SW	Seasonal Wetland	0.099	0.099	CH2M HILL, 2003
145-PF	Ponded Feature	0.008	0.008	CH2M HILL, 2003
146-PF	Ponded Feature	0.005	0.005	CH2M HILL, 2003
147-SW	Seasonal Wetland	0.112	0.100	CH2M HILL, 2003
148-PF	Ponded Feature	0.027	0.027	CH2M HILL, 2003
149-DD	**Drainage Ditch**	**0.013**	**0.008**	**CH2M HILL, 2003**
150-PF	Ponded Feature	0.110	0.058	CH2M HILL, 2003
151-DD	**Drainage Ditch**	**0.018**	**0.009**	**CH2M HILL, 2003**
152-PF	*Ponded Feature*	*0.033*	*0.000*	*CH2M HILL, 2003*
153-DD	**Drainage Ditch**	**0.016**	**0.008**	**CH2M HILL, 2003**
154-DD	**Drainage Ditch**	**0.022**	**0.012**	**CH2M HILL, 2003**
155-DD	Drainage Ditch	0.183	0.163	CH2M HILL, 2003
156-PF	*Ponded Feature*	*0.021*	*0.000*	*CH2M HILL, 2003*
157-PF	Ponded Feature	0.036	0.019	CH2M HILL, 2003
158-PF	Ponded Feature	0.007	0.006	CH2M HILL, 2003
159-DD	**Drainage Ditch**	**0.014**	**0.009**	**CH2M HILL, 2003**
160-PF	Ponded Feature	0.014	0.014	CH2M HILL, 2003
161-PF	Ponded Feature	0.011	0.011	CH2M HILL, 2003
162-SW	*Seasonal Wetland*	*0.033*	*0.000*	*CH2M HILL, 2003*
163-CS (WUS)	***Seasonal Creek***	***0.034***	***0.000***	***CH2M HILL, 2003***
164-CS (WUS)	***Seasonal Creek***	***0.052***	***0.000***	***CH2M HILL, 2003***
165-VP	***Vernal Pool***	***0.007***	***0.000***	***CH2M HILL, 2003***
166-DD (WUS)	**Drainage Ditch**	**0.006**	**0.006**	**CH2M HILL, 2003**
167-DD	Drainage Ditch	0.024	0.004	CH2M HILL, 2003
168-DD	**Drainage Ditch**	**0.037**	**0.005**	**CH2M HILL, 2003**
169-DD	Drainage Ditch	0.015	0.003	CH2M HILL, 2003
170-CS (WUS)	**Seasonal Creek**	**0.030**	**0.005**	**CH2M HILL, 2003**
171-DD	**Drainage Ditch**	**0.053**	**0.020**	**CH2M HILL, 2003**
Laydown Area				
LD SS1	**Seasonal Stream**	**0.350**	**0.132**	**CH2M HILL, 2003**
LD SW1A	**Seasonal Swale**	**0.105**	**0.092**	**CH2M HILL, 2003**
LD SW1B	***Seasonal Swale***	***0.016***	***0.000***	***CH2M HILL, 2003***
LD SW2	**Seasonal Swale**	**0.213**	**0.213**	**CH2M HILL, 2003**
LD SW3	**Seasonal Swale**	**0.133**	**0.089**	**CH2M HILL, 2003**
LD SW4	**Seasonal Swale**	**0.107**	**0.037**	**CH2M HILL, 2003**
LD VP1	***Vernal Pool***	***0.152***	***0.000***	***CH2M HILL, 2003***
LD VP2	**Vernal Pool**	**0.023**	**0.023**	**CH2M HILL, 2003**
LD VP3	**Vernal Pool**	**0.006**	**0.006**	**CH2M HILL, 2003**
LD VP4	***Vernal Pool***	***0.049***	***0.000***	***CH2M HILL, 2003***
LD VP5	***Vernal Pool***	***0.044***	***0.000***	***CH2M HILL, 2003***
LD VP6	***Vernal Pool***	***0.005***	***0.000***	***CH2M HILL, 2003***
LD VP7	***Vernal Pool***	***0.012***	***0.000***	***CH2M HILL, 2003***
LD VP8	***Vernal Pool***	***0.009***	***0.000***	***CH2M HILL, 2003***
LD VP9	***Vernal Pool***	***0.03***	***0.000***	***CH2M HILL, 2003***
LD VP10	***Vernal Pool***	***0.018***	***0.000***	***CH2M HILL, 2003***
LD VP11	***Vernal Pool***	***0.001***	***0.000***	***CH2M HILL, 2003***
LD VP12	**Vernal Pool**	**0.005**	**0.005**	**CH2M HILL, 2003**
LD VP13	**Vernal Pool**	**0.006**	**0.006**	**CH2M HILL, 2003**
LD VP14	**Vernal Pool**	**0.004**	**0.004**	**CH2M HILL, 2003**
LD VP15	**Vernal Pool**	**0.011**	**0.011**	**CH2M HILL, 2003**
Power Plant Site[4]				
Drainage 1	**Seasonal Stream**	**0.009**	**0.009**	**CH2M HILL, 2002**
Drainage 2	**Seasonal Wetland**	**0.005**	**0.005**	**CH2M HILL, 2002**
Drainage 3	**Seasonal Stream**	**0.009**	**0.009**	**CH2M HILL, 2002**
Drainage 4	**Seasonal Stream**	**0.013**	**0.013**	**CH2M HILL, 2002**
Drainage 5	**Seasonal Wetland**	**0.002**	**0.002**	**CH2M HILL, 2002**
Drainage 6	**Seasonal Wetland**	**0.008**	**0.008**	**CH2M HILL, 2002**
Drainage 7	**Seasonal Stream**	**0.009**	**0.009**	**CH2M HILL, 2002**

DSW1	Seasonal Wetland	0.345	0.126	DEC, 2000
DSW2	Seasonal Wetland	1.195	0.524	DEC, 2000
DSW3	*Seasonal Wetland*	*0.265*	*0.000*	*DEC, 2000*
HVP1	*Vernal Pool*	*0.116*	*0.000*	*DEC, 2000*
HVP2	*Vernal Pool*	*0.010*	*0.000*	*DEC, 2000*
HVP3	Vernal Pool	0.011	0.011	DEC, 2000
HVP4	Vernal Pool	0.016	0.016	DEC, 2000
HVP5	*Vernal Pool*	*0.016*	*0.000*	*DEC, 2000*
HVP6	*Vernal Pool*	*0.007*	*0.000*	*DEC, 2000*
OW1	*Open Water*	*0.037*	*0.000*	*DEC, 2000*
OW2	*Open Water*	*0.031*	*0.000*	*DEC, 2000*
OW3	*Open Water*	*0.655*	*0.000*	*DEC, 2000*
PT1	*Placer Tailings*	*3.548*	*0.000*	*DEC, 2000*
PT10	*Placer Tailings*	*0.123*	*0.000*	*DEC, 2000*
PT2	*Placer Tailings*	*0.055*	*0.000*	*DEC, 2000*
PT3	*Placer Tailings*	*0.129*	*0.000*	*DEC, 2000*
PT4	*Placer Tailings*	*0.642*	*0.000*	*DEC, 2000*
PT5	*Placer Tailings*	*0.010*	*0.000*	*DEC, 2000*
PT6	*Placer Tailings*	*0.012*	*0.000*	*DEC, 2000*
PT7	*Placer Tailings*	*0.008*	*0.000*	*DEC, 2000*
PT8	*Placer Tailings*	*0.201*	*0.000*	*DEC, 2000*
PT9	*Placer Tailings*	*0.106*	*0.000*	*DEC, 2000*
S1	*Seasonal Stream*	*0.005*	*0.000*	*DEC, 2000*
S10	*Seasonal Stream*	*0.084*	*0.000*	*DEC, 2000*
S11	Seasonal Stream	0.383	0.106	DEC, 2000
S12	*Seasonal Stream*	*0.025*	*0.000*	*DEC, 2000*
S13	*Seasonal Stream*	*0.080*	*0.000*	*DEC, 2000*
S14	*Seasonal Stream*	*0.004*	*0.000*	*DEC, 2000*
S15	*Seasonal Stream*	*0.002*	*0.000*	*DEC, 2000*
S16	Seasonal Stream	0.030	0.029	DEC, 2000
S17	*Seasonal Stream*	*0.029*	*0.000*	*DEC, 2000*
S18	*Seasonal Stream*	*0.006*	*0.000*	*DEC, 2000*
S19	*Seasonal Stream*	*0.092*	*0.000*	*DEC, 2000*
S2	*Perennial Stream*	*0.304*	*0.000*	*DEC, 2000*
S20	*Seasonal Stream*	*0.002*	*0.000*	*DEC, 2000*
S21	*Seasonal Stream*	*0.001*	*0.000*	*DEC, 2000*
S22	*Seasonal Stream*	*0.141*	*0.000*	*DEC, 1999, 2000*
S23	*Seasonal Stream*	*0.038*	*0.000*	*DEC, 2000*
S24	*Seasonal Stream*	*0.024*	*0.000*	*DEC, 2000*
S25	*Seasonal Stream*	*0.239*	*0.000*	*DEC, 2000*
S26	*Seasonal Stream*	*0.014*	*0.000*	*DEC, 2000*
*S27**	*Seasonal Stream*	*0.089*	*0.000*	*DEC, 1999, 2000*
S28	*Seasonal Stream*	*0.022*	*0.000*	*DEC, 2000*
S3	Perennial Stream	2.125	0.110	DEC, 2000
S4	*Seasonal Stream*	*0.012*	*0.000*	*DEC, 2000*
S5	*Seasonal Stream*	*0.151*	*0.000*	*DEC, 1999, 2000*
S6	*Seasonal Stream*	*0.002*	*0.000*	*DEC, 2000*
S7	*Seasonal Stream*	*0.101*	*0.000*	*DEC, 1999, 2000*
S8	Seasonal Stream	0.074	0.074	DEC, 2000
S9	*Seasonal Stream*	*0.045*	*0.000*	*DEC, 2000*
SM1	*Seasonal Marsh*	*0.402*	*0.000*	*DEC, 2000*
SM2	*Seasonal Marsh*	*0.003*	*0.000*	*DEC, 2000*
SM3	Seasonal Marsh	0.346	0.285	DEC, 2000
SS1	*Seasonal Swale*	*0.713*	*0.000*	*DEC, 2000*
*SS-1**	*Seasonal Swale*	*0.688*	*0.000*	*DEC, 1999*
SS2	*Seasonal Swale*	*0.792*	*0.000*	*DEC, 2000*
SS-2	*Seasonal Swale*	*0.329*	*0.000*	*DEC, 1999*
SS3	*Seasonal Swale*	*0.980*	*0.000*	*DEC, 2000*
SS-3	*Seasonal Swale*	*0.236*	*0.000*	*DEC, 1999*
SS4	Seasonal Swale	0.248	0.024	DEC, 2000
SS-4	*Seasonal Swale*	*0.248*	*0.000*	*DEC, 1999*
SS5	*Seasonal Swale*	*0.029*	*0.000*	*DEC, 2000*
SS-5	*Seasonal Swale*	*0.393*	*0.000*	*DEC, 1999*
SS6	*Seasonal Swale*	*0.060*	*0.000*	*DEC, 2000*
SS7	*Seasonal Swale*	*0.165*	*0.000*	*DEC, 2000*
SW1	*Seasonal Wetland*	*0.098*	*0.000*	*DEC, 2000*

SW10*	**Seasonal Wetland**	**0.173**	**0.159**	**DEC, 2000**
SW11*	**Seasonal Wetland**	**0.382**	**0.146**	**DEC, 2000**
SW12	**Seasonal Wetland**	**0.035**	**0.035**	**DEC, 2000**
SW13	**Seasonal Wetland**	**0.045**	**0.045**	**DEC, 2000**
SW14	***Seasonal Wetland***	***0.073***	***0.000***	***DEC, 2000***
SW15	***Seasonal Wetland***	***0.016***	***0.000***	***DEC, 2000***
SW16	***Seasonal Wetland***	***0.046***	***0.000***	***DEC, 2000***
SW17	***Seasonal Wetland***	***0.072***	***0.000***	***DEC, 2000***
SW18	***Seasonal Wetland***	***0.117***	***0.000***	***DEC, 2000***
SW19	***Seasonal Wetland***	***0.031***	***0.000***	***DEC, 2000***
SW2	***Seasonal Wetland***	***0.136***	***0.000***	***DEC, 2000***
SW3	***Seasonal Wetland***	***0.034***	***0.000***	***DEC, 2000***
SW4	***Seasonal Wetland***	***0.289***	***0.000***	***DEC, 2000***
SW5*	***Seasonal Wetland***	***0.319***	***0.000***	***DEC, 2000***
SW6	***Seasonal Wetland***	***0.397***	***0.000***	***DEC, 2000***
SW7	***Seasonal Wetland***	***0.006***	***0.000***	***DEC, 2000***
SW8	***Seasonal Wetland***	***0.004***	***0.000***	***DEC, 2000***
SW9*	**Seasonal Wetland**	**0.104**	**0.104**	**DEC, 2000**
VP1	***Vernal Pool***	***0.090***	***0.000***	***DEC, 2000***
VP-1	***Vernal Pool***	***0.019***	***0.000***	***DEC, 1999***
VP10	***Vernal Pool***	***0.138***	***0.000***	***DEC, 2000***
VP11	***Vernal Pool***	***0.021***	***0.000***	***DEC, 2000***
VP2	***Vernal Pool***	***0.005***	***0.000***	***DEC, 2000***
VP-2	***Vernal Pool***	***0.013***	***0.000***	***DEC, 1999***
VP3	***Vernal Pool***	***0.090***	***0.000***	***DEC, 2000***
VP-3	***Vernal Pool***	***0.027***	***0.000***	***DEC, 1999***
VP4	***Vernal Pool***	***0.066***	***0.000***	***DEC, 2000***
VP-4	***Vernal Pool***	***0.031***	***0.000***	***DEC, 1999***
VP5	***Vernal Pool***	***0.063***	***0.000***	***DEC, 2000***
VP-5	***Vernal Pool***	***0.087***	***0.000***	***DEC, 1999***
VP6	***Vernal Pool***	***0.016***	***0.000***	***DEC, 2000***
VP-6	***Vernal Pool***	***0.032***	***0.000***	***DEC, 1999***
VP7	***Vernal Pool***	***0.006***	***0.000***	***DEC, 2000***
VP8	***Vernal Pool***	***0.013***	***0.000***	***DEC, 2000***
VP9	**Vernal Pool**	**0.033**	**0.033**	**DEC, 2000**
	Total Acreage	**59.324**	**8.501**	

Jurisdictional Wetland Impact Summary

Temporary Impacts along Natural Gas Pipeline	**1.749 acres**
Temporary Impacts at CPP Site	**1.172 acres**
Total Temporary Impacts (Plant Site and Pipeline)	**2.921 acres**
Permanent Impacts at Laydown Area	**0.618 acres**
Permanent Impacts at Power Plant Site	**0.711 acres**
Total Permanent Impacts (Plant Site and Laydown Area)	**1.329 acres**

Notes:

Map unit entries shown in **BOLDFACE** refer to jurisdictional wetlands.

Map unit entries in *ITALICS* are outside of the construction corridor but within the wetland survey area.

1) Seasonal Creek and Seasonal Marsh are comparable to Intermittent Creek and Marsh habitats, respectively.
2) Wetland acreages were determined using digital GIS. DEC units on the CPP site were digitized into GIS system from DEC report that was mapped onto a non-orthographic aerial photograph. All acreages (including modified DEC units shown by *) were calculated using GIS and may differ slightly from those reported in DEC 2000 report. Acreages for streams were taken directly from the DEC 2000 report, except SS27, which was extended by USACE approximately 300 ft. during the November 15, 2002 verification visit.
3) Construction impacts on 1.749 acres along pipeline will be temporary since original contours and surface soils will be restored.
4) CH2M HILL delineation on the laydown areas and DEC delineations on the CPP site were confirmed (with modifications as incorporated herein) by USACE on November 15, 2002. The wetland delineation for the entire project (dated February 7, 2003) was approved by the Corps.

Sources:

Davis Environmental Consulting (DEC). 1999. Wetland Delineation Report for the Rancho Seco Photovoltaic Expansion Area, Sacramento County. August.

DEC. 2000. Wetland Delineation Report for the Proposed South Sacramento Power Plant at Rancho Seco, Sacramento County. June.

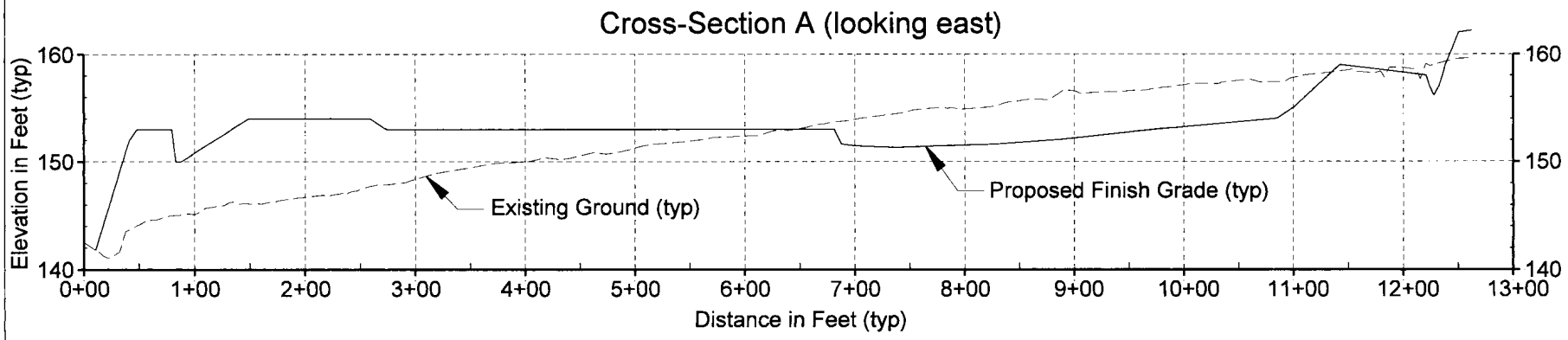
CH2M HILL. 2002. Wetland areas were mapped by Jones and Stokes (1993) but the potential areas of impact were determined by field measurements made by CH2M HILL personnel on May 29, 2002.

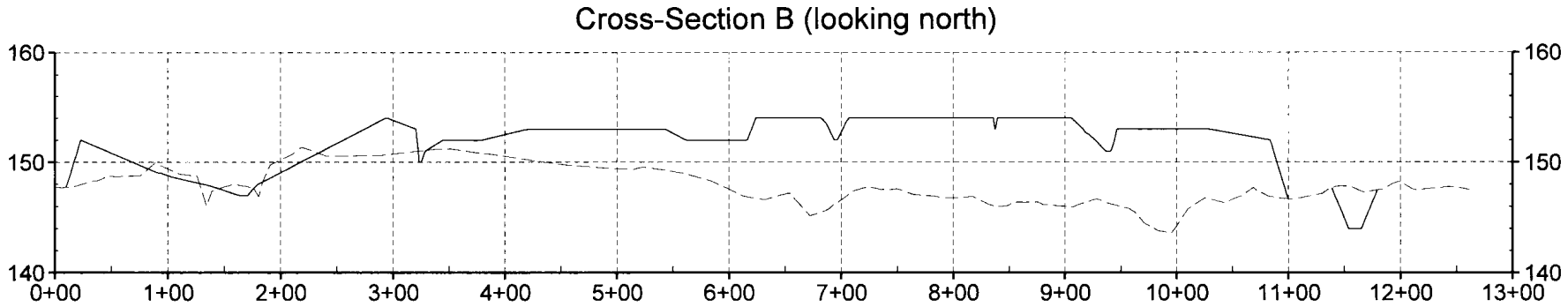
CH2M HILL. 2003. Jurisdictional Waters of the U.S. Report for the Cosumnes Power Plant, Sacramento County, California. February 7.

Table 2. Names and Addresses of Property Owners Adjoining Wetlands in the Project Area

Cosumnes Power Plant Project, Sacramento Municipal Utilities District

Landowner	Wetland Unit Ids	Address	City	State	Zip Code
Sacramento County Regional Sanitation Agency	001-SW; 002-SW; 003-DD	8700 Franklin Street	Sacramento	CA	95823
Union Pacific Railroad Co.	001-SW; 002-SW; 003-DD; 004-SW	10031 Foothills Blvd.	Roseville	CA	95747
Angelo Tsakopoulos	006-DD (WUS)	7700 College Town Dr. #101	Sacramento	CA	95826
Union Pacific Railroad Co.	006-DD (WUS)	10031 Foothills Blvd.	Roseville	CA	95747
Sacramento Municipal Utility District	006-DD (WUS)	6201 S Street	Sacramento	CA	95817
Union Pacific Railroad Co.	007-SW; 008-SW	10031 Foothills Blvd.	Roseville	CA	95747
Laguna Stonelake LLC	011-SW	7700 College Town Dr. #101	Sacramento	CA	95826
E&J Properties	012-SW; 013-SW; 014-SW	555 Capitol Mall #1425	Sacramento	CA	95814
Valley Hi Holdings, LLC	015-FM; 016-DD (WUS)	9595 Franklin Blvd.	Elk Grove	CA	95759
Edward Gillum	019-DD; 019A-SW; 019B-SW; 019C-SW; 020-DD	P.O. Box 407	Pebble Beach	CA	93953
Union Pacific Railroad Co.	019-DD	10031 Foothills Blvd.	Roseville	CA	95747
Dennis Buscher	020-DD; 021-DD; 022-DD	4625 Bilby Road	Elk Grove	CA	95758
Union Pacific Railroad Co.	020-DD; 021-DD; 022-DD	10031 Foothills Blvd.	Roseville	CA	95747
Yvonne, Richard, Kim and Brent Bonnacci	022-DD; 022A-SW	10320 Westwood Court	Rancho Cordova	CA	95670
Union Pacific Railroad Co.	022-DD; 022A-SW	10031 Foothills Blvd.	Roseville	CA	95747
Lennar Rennaissance Inc.	027-DD	2150 Professional Drive # 170	Roseville	CA	95661
Union Pacific Railroad Co.	027-DD; 028-DD; 030-DD (WUS)	10031 Foothills Blvd.	Roseville	CA	95747
Joseph and Evelyn Soares	027-DD; 028-DD; 030-DD (WUS)	8909 Polhemus Dr.	Elk Grove	CA	95624
Machado	030-DD	10837 Franklin Blvd.	Elk Grove	CA	95758
Barbara Morse	044-CP (WUS); 045-SW	11040 Bruceville Road	Elk Grove	CA	95758
John and Regina Bozich	044-CP (WUS); 045-SW	495 Bret Harte Road	Sacramento	CA	95864
Katz Family Trust	044-CP (WUS); 045-SW; 048-DD	P.O. Box 912	Port Angeles	WA	98362
Luis and Edward Pimentel	048-DD	11375 Bruceville Road	Elk Grove	CA	95758
Elisabeth and Varghese Mathew	048-DD	6633 Palm Drive	Carmichael	CA	95608
Marina Square Partners LP	048-DD	801 K Street	Sacramento	CA	95814
John Belcher	056-FM	7460 Gordon Valley Road	Suisun City	CA	94585
State of California	059-RW; 060-RV (WUS); 061-RW; 063-DD; 066-CP (WUS); 071-SW; 072-SW; 074-SW	801 K Street # 806	Sacramento	CA	95814
Pellandini	081-SW	10490 Arno Road	Galt	CA	95632
The Nature Conservancy	077-VP; 080-VP; 082-DD; 085-VP; 086-VP; 089-SS; 090-SS; 091-SS; 092-SS; 093-SS	201 Mission Street # 4	San Francisco	CA	94106
Peter Van Warmerdam	097-CP (WUS)	12121 McKenzie Road	Galt	CA	95632
Maria and Oneal Lourence	099-DD	10920 Valesin Road	Galt	CA	95632
Joe and Gabriel Silva	099-DD	550 Saratoga Avenue	Santa Clara	CA	95050
EB and Helen Bottimore Family	107-DD	P.O. Box 147	Herald	CA	95638
Kenefick Family Trust	120-FM; 122-CP (WUS); 125-CS (WUS); 126-SW; 127-SW	12001 Alta Mesa Road	Galt	CA	95632
United States of America	149-DD	Twin Cities Road	Herald	CA	95638
Southern Pacific Transportation Co.	149-DD; 138-PF;151-DD;153-DD;154-DD; 159-DD (WUS); 163-CS (WUS)	Ione Road	Herald	CA	95638
Aldeane and Bill Erickson	163-CS (WUS)	13487 Twin Cities Road	Herald	CA	95638
Faustino and Mary Silva	164-CS (WUS); 166-DD (WUS)	11540 Clay Station Road	Herald	CA	95638
West Coast Grape Farms	168-DD; 170-DD (WUS); 171-DD	P.O. Box 789	Ceres	CA	95307
Sacramento Municipal Utility District	CPP Plant Site and Laydown Area	6201 S Street	Sacramento	CA	95817





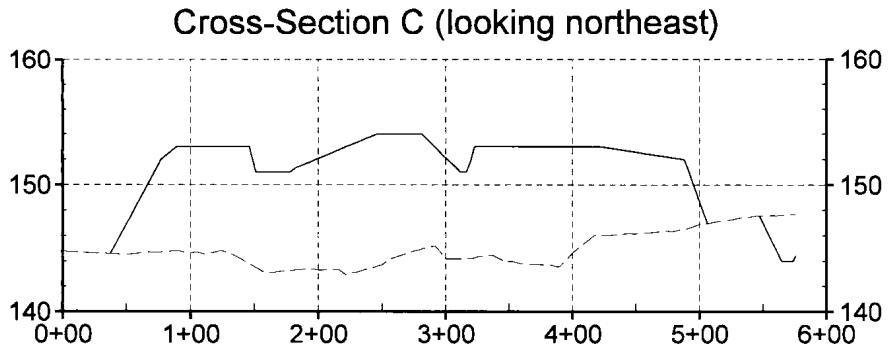


Figure 1
Proposed Plant Building Pad Limits
Cosumnes Power Plant Project
Sacramento Municipal Utilities District

CH2MHILL

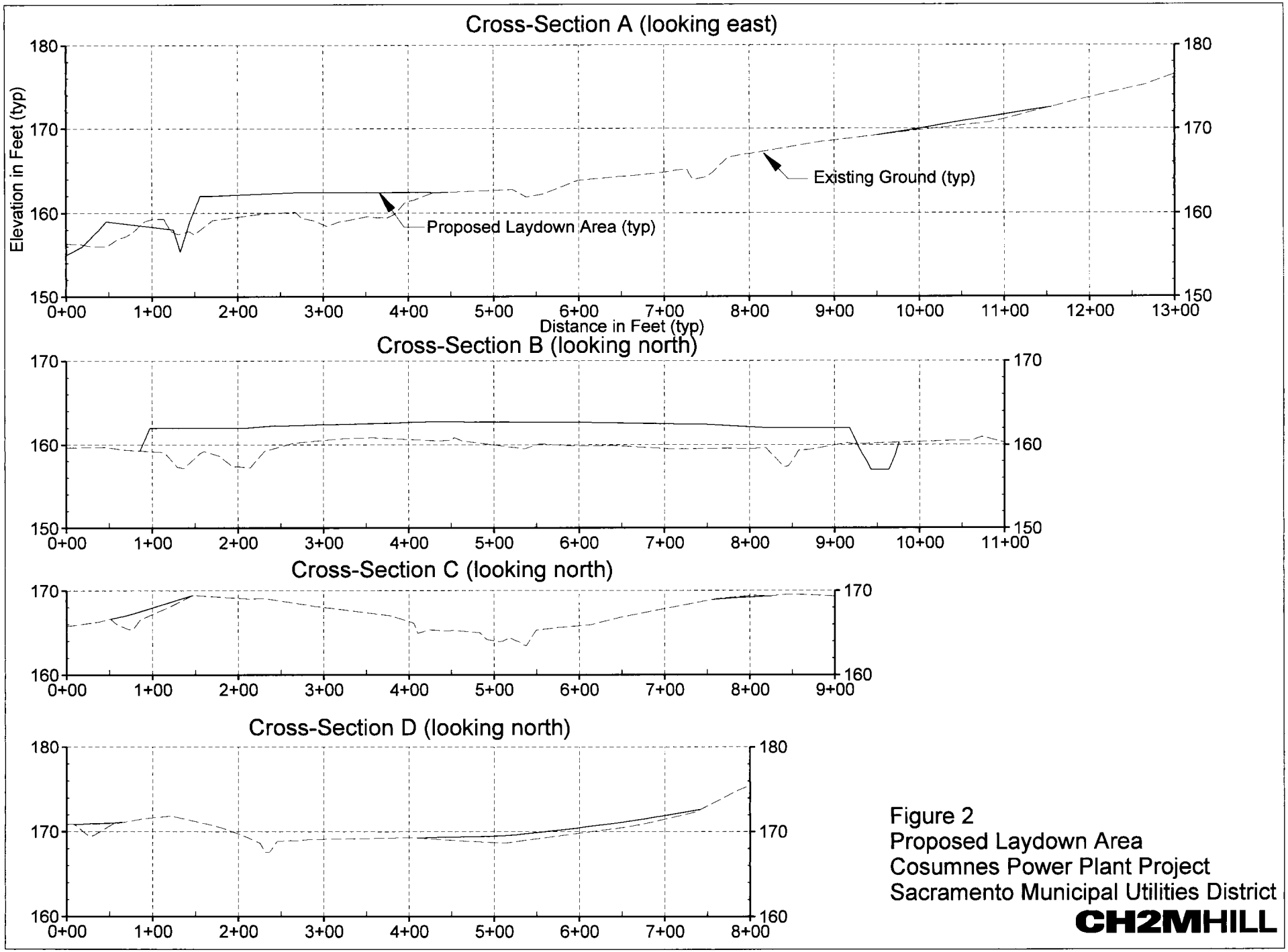
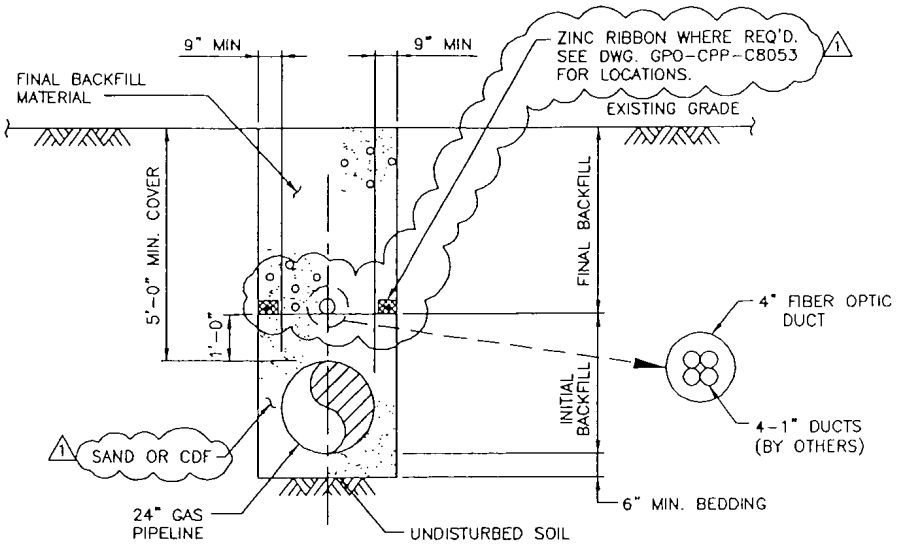


Figure 2
Proposed Laydown Area
Cosumnes Power Plant Project
Sacramento Municipal Utilities District

CH2MHILL

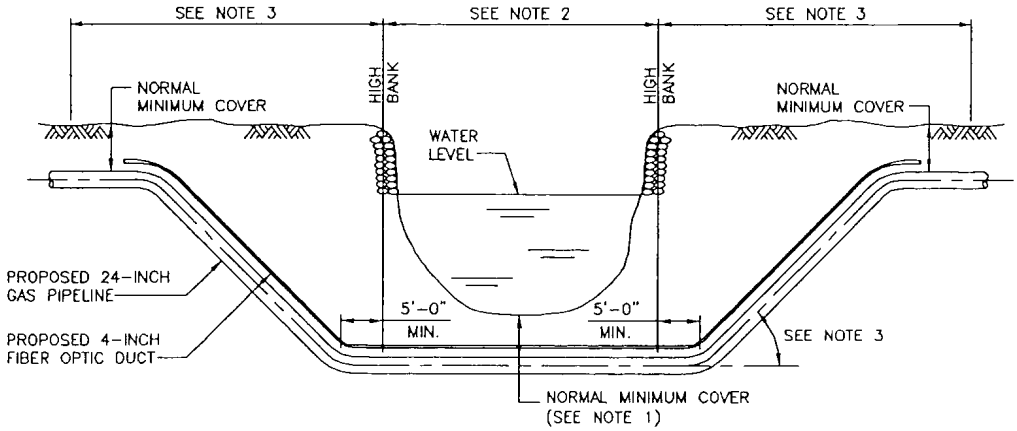


PROPOSED 24-INCH GAS PIPELINE
TYPICAL TRENCH DETAIL (UNPAVED SURFACE) 2
SCALE: 1"=2'

AT LOCATIONS WHERE INITIAL BACKFILL MATERIAL DOES NOT MEET REQUIREMENTS 1

NOTES:

1. FOR TRENCH BACKFILL MATERIAL REQUIREMENTS SEE SPECIFICATION SECTION 02315, TRENCHING AND BACKFILLING.
2. CMP PIPE AND END SECTIONS SHALL BE GALVANIZED 14 GAGE AND SHALL COMFORM TO ASTM A 760/A, TYPE 1, WITH CORRUGATION SIZE 2-2/3 BY 1/2 INCH.
3. CMP PIPE SHALL BE INSTALLED ACCORDING TO ASTM A 798/A.
4. BEDDING MATERIAL SHALL BE SAND OR CDF. 1



TYPICAL DITCH/STREAM CROSSING 6
SCALE: N.T.S.

NOTES:

1. PROVIDE NORMAL MINIMUM COVER OF 60" OR 72" SHOWN IN THE PROFILE FOR THE SURROUNDING AREA.
2. PIPE SHOULD BE LEVEL UNDER STREAM CHANNEL TO THE DEPTH SHOWN ABOVE.
3. PIPE MAY BE LAID TO EXTRA DEPTH AT THESE LOCATIONS TO PREVENT EXCESSIVE BENDING.
4. THE LONGITUDINAL AXIS OF THE PIPE SHALL NOT BE DEFLECTED MORE THAN 1.9 DEGREES IN ANY LENGTH ALONG THE PIPE AXIS EQUAL TO THE DIAMETER OF THE PIPE.
5. INSTALLATION SHALL BE IN ACCORDANCE WITH APPLICABLE PERMIT.

Figure 3.

ENGINEERING	DATE
DESIGN BY J. MAHER	06-05-02
DRAWN BY S.KAHN	06-05-02
CHECKED BY	
APPROVED BY	
APPROVED BY	

DO NOT SCALE THIS DRAWING USE DIMENSIONS ONLY

PREPARED BY EARTH TECH OAKLAND, CALIFORNIA

PREPARED FOR SMUD SACRAMENTO MUNICIPAL UTILITIES DISTRICT COGENERATION PIPELINE PROJECT

DRAWING TITLE
PIPELINE
PIPELINE CONSTRUCTION DETAILS SHT. 1
SMUD POWER GENERATION
COSUMNES POWER PLANT GAS PIPELINE EXTENSION

SCALE AS SHOWN | JOB NO. 51860 | DRAWING NUMBER GPO-SYS-C1101 | REV. 1

ATTACHMENT W&SR-148B

Sacramento Municipal Utility District
Cosumnes Power Project Alternatives Analysis

In order for the U.S. Army Corps of Engineers (Corps) to issue a permit under Section 404 of the federal Clean Water Act (CWA), it must make a finding that the proposed project complies with the U.S. Environmental Protection Agency's (EPA's) Guidelines, issued under Section 404(b)(1) of the CWA. Central to EPA's 404(b)(1) Guidelines is a hierarchical approach designed to avoid and/or minimize impacts to wetlands and other waters of the United States. Applicants are required to avoid impacts were possible, minimize impacts that cannot be avoided, and compensate for any remaining impacts that can neither be avoided nor minimized to an insignificant level.

The Sacramento Municipal Utility District (SMUD) has designed its Cosumnes Power Project (CPP) in accordance with this approach, with the result that impacts to federally regulated wetlands and other waters of the U.S. have been avoided to the maximum extent practicable and minimized where avoidance was not possible. SMUD's analysis of its avoidance and minimization options (i.e., alternatives analysis) is presented below. A mitigation plan to compensate for impacts that can neither be avoided nor minimized to a non-significant level is being submitted under separate cover.

1.0 Alternative Sites

The Guidelines state that ". . . no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences."[1] An alternative is considered practicable ". . . if it is available and capable of being done after taking into consideration cost, existing technology and logistics in light of overall project purposes."[2]

SMUD's overall project purpose is to restore the electric generating capacity at its Rancho Seco facility in order to provide additional generation and critically needed

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1 40 CFR § 230.10(a).

2 *Id.* 230.10(a)(2).

voltage support using existing or nearby critical infrastructure (e.g., the existing switchyard and appropriately sized water conveyance and storage facilities and transmission lines with unused capacity) by constructing a gas generating facility to serve impending electricity load needs from within the SMUD service area. Although this project purpose (the restoration of electric generating capacity at an existing facility) does not lend itself to off-site alternatives, SMUD and the California Energy Commission (CEC) staff examined five alternative sites during the course of the ongoing CEC licensing process.[3] Those sites included the:

1. Proctor & Gamble Site;
2. Campbell's Soup Site;
3. Carson Ice-Generation Facility;
4. Lodi Site; and
5. Woodland Site.

In accordance with the 404(b)(1) Guidelines, each of these sites was compared against the cost, existing technology and logistical criteria inherent in the overall project purpose.

As an initial screening criterion, 30 – 35 acres of land was considered necessary for the proposed power plant and appurtenant structures, plus a nearby laydown/parking area to be used during construction. Although the Proctor & Gamble and Campbell's Soup sites exhibited some of the infrastructure needed for the project, the available land at those sites (5 acres at Proctor & Gamble and 10 acres at Campbell Soup) was not sufficient and, therefore, they were eliminated from further consideration. The other three sites were examined in more detail.

1.1 Carson Ice-Generation Facility

The Carson Ice-Generation site (Figure 1 – Use existing figure if available) is a 55-acre site that is currently managed in accordance with the policies of the Sacramento Regional Wastewater Treatment Plant's (SRWTP) Bufferlands. The Sacramento Regional County

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[3] The Corps' generally gives deference to state/local decision-making processes. *See* 40 CFR § 325.2(a)(6) ("If a district engineer makes a decision on a permit application which is contrary to state or local decisions, the district engineer will include in the decision document the significant national issues and explain how they are overriding in importance.")

Sanitation District (SRCSD) set aside 2,500 acres in the 1970s to serve as a buffer between the SRWTP and surrounding neighborhoods in southern Sacramento County. The SRWTP is located at 8521 Laguna Station Road in Elk Grove, approximately 20 miles northwest of the CPP site. The SRWTP evaporation ponds are to the west of the alternative site, the Carson Ice-Generation facility, a 95 MW peaking plant, is adjacent to the site to the north, and the Bufferlands are to the south and to the east of the site, beyond the Union Pacific Railroad, which is adjacent to the east of the site. A majority of the parcel is currently used for agriculture.

Although there are no current plans, the SRCSD has stated that it would like to reserve a 55-acre area for part of its planned expansion zone (SRCSD 2002a). If the SRWTP does not expand onto the site, the parcel would become a permanent part of the Bufferlands. Since the parcel is currently being managed as part of the Bufferlands, construction of a power plant is not consistent with the County's management policy for the Bufferlands, which discourages the conversion of agricultural land or open space to permanent structures.

Nearby drainage courses include Laguna Creek, approximately 1,600 feet to the northeast of the site (note that this is not the same Laguna Creek that passes near the proposed CPP site), and Morrison Creek, which passes approximately one mile to the west of the site. Morrison Creek drains into the Sacramento River approximately two miles west of the site. Laguna Creek is a tributary to Morrison Creek. There is a small man-made drainage located along the southern boundary of the site. According to the Sacramento County Department of Public Works, the Carson Ice-Gen site is entirely within the 100-year floodplain of Laguna Creek. Potential flood depths vary but are generally one foot or more.

The parcel is potential habitat for Swainson's hawk (State-listed threatened species) and burrowing owl (federal and State-listed species of concern). There are known Swainson's hawk nests within one-quarter mile of the site; therefore, the site is likely to be within their foraging area. Along the southern boundary of the parcel there is a perennially wet

drainage ditch, which is potential habitat for giant garter snake, a federally-listed endangered species.

The SRWTP operates a 5 million gallon per day (gpd) water recycling facility adjacent to the site. The County has certified an Environmental Impact Report evaluating the production of an additional 5 million gpd, although a construction date has not been set. If and when the expanded recycled water facility is completed, sufficient recycled water would be available to operate a power plant at this site. Since the SRWTP is adjacent to the site, installation of a short water pipeline would be required.

The site is adjacent to SMUD's existing natural gas line that terminates at the Carson Ice-Generation facility and connects to PG&E's Line 400 and 401 near Winters, California. Existing transmission lines that connect to the Carson Ice-Generation facility are 69 kV, although a double-circuit 230 kV transmission line runs north-south adjacent to the site. For a 1,000 MW power plant, the existing double-circuit 230 kV lines would not be adequate. A new 230 kV transmission line would be required. This analysis assumes the transmission line would extend overhead, east from the site along Sims Road, crossing Laguna Station Road, turn south and parallel the existing transmission line along the Union Pacific railroad line. The new transmission line would extend south for approximately three miles to avoid conflicts in the City of Elk Grove. The transmission line would then continue east, parallel to Bilby Road, through undeveloped land for approximately 6.5 miles to connect to the north-south SMUD 230 kV system corridor that parallels Waterman Road.

The Carson Ice-Generation facility was not considered a practicable alternative because the SRCSD has indicated that it would like to reserve the parcel for future use, and its use as a power plant site would be inconsistent with the County's management policy for the Bufferlands, which discourages the conversion of agricultural land or open space to

permanent structures. It is, therefore, not reasonably available.[4] In addition, the parcel is entirely within the 100-year floodplain of Laguna Creek. As a result, a power plant at that location would have to be elevated above the floodplain or protected by a levee structure. Although these protection strategies are within the realm of existing engineering technology, they would add significant cost to the project and would not necessarily protect the power plant from greater than 100-year floods.

1.2 Lodi Site

The Lodi site was identified by CEC staff and is a 52-acre site located on North Thornton Road, southwest of the City of Lodi and approximately one-half mile west of I-5, south of Frontage Road (Figure 2 - Use existing figure if available). The site is located in San Joaquin County, approximately 30 miles southwest of the proposed CPP site. The site is west of the Northern California Power Authority's (NCPA) 50 MW Combustion Turbine No. 2 project and south of the White Slough Water Pollution Control Facility (WSWPCF). It is accessible via existing paved roads. The City of Lodi owns approximately 1,000 acres in the area, 30 acres of which are used by the WSWPCF and 900 acres of which are leased to local farmers for agricultural uses. The WSWPCF is currently screened from views from I-5 and other roadways to the east by a row of mature trees along the plant's eastern boundary. These trees would also provide some screening for a power plant.

The site is located in San Joaquin County, approximately 30 miles southwest of the proposed CPP site. The site is zoned Public and currently used for agriculture. However, the City of Lodi is willing to negotiate other uses for the land.

Upgrades or reinforcement of the existing roads would likely be required to support heavy load trucks during construction. Based on information provided by the WSWPCF and the San Joaquin County Department of Public Works, groundwater is very shallow and is at approximately 5 feet below the surface at this site. Soils are fine alluvium

[4] *See* 40 CFR § 230.10(a)(2) ("If it is otherwise a practicable alternative, an area not presently owned by the applicant which could reasonably be obtained, utilized, expanded or managed in order to fulfill the basic purpose of the proposed activity may be considered.")

typical of the California central valley. According to the San Joaquin County Department of Public Works, the property is entirely within the floodplain of White Slough and possibly Bishop Cut. The 100-year flood depth is approximately 3 feet. Therefore, it would require a substantial amount of fill to raise the site above the 100-year floodplain. The Lodi site is subject to substantially greater flood risk than the CPP site. A power plant at this site could be made safe from 100-year flooding by elevating on 120,000 to 160,000 cubic yards of fill or the construction of a 6+ foot perimeter levee, but there would still be a risk of damage by floods larger than the 100-year event.

Nearby drainage courses include White Slough and Bishop Cut, both located approximately 1.2 miles to the west of the project site. One of the ponds of the White Slough Wildlife Area (WSWA) is located approximately 1,500 feet west of the project site. A 20-acre parcel used for agriculture exists between the alternative site and the WSWA. The WSWA is under the jurisdiction of the California Department of Water Resources but is managed by the California Department of Fish Game. The WSWA land adjacent to the City of Lodi property line contains unconnected canal ponds that are frequented by recreational fishermen. In addition, the WSWPCF evaporation ponds are located northeast of the site and are frequented by birdwatchers throughout the year because the ponds are heavily used by migratory waterfowl (WSWPCF 2002). The nearest residential receptors are more than a mile away, beyond the agricultural fields to the east. As such, the nearest residential receptors likely would not be able to see or hear a new energy facility at this site, as its view would be screened by the existing industrial facilities, existing vegetation, and I-5.

The WSWPCF adjacent to the site produces non-disinfected secondary-treated recycled water that may be sufficient to meet the cooling needs of a power plant comparable to a 1,000 MW CPP, although additional treatment would be necessary. Recycled water from the WSWPCF is currently used by agriculture in the summer months. Therefore, additional water resources would be required to supply either the CPP or the agricultural operations during the summer months.

Four existing 230 kV transmission lines are located at the northeast corner of the Lodi site. The lines would be easily accessible to the power plant. The eastern-most lines are a double-circuit transmission line owned by PG&E. The western-most lines are two single-circuit transmission lines owned by the Western Area Power Administration (WAPA). The plant could connect to either the PG&E or WAPA lines and transfer power to the SMUD system at the Elk Grove Substation, approximately 20 miles north of the Lodi site.

The Lodi site is not considered a practicable alternative because the parcel is entirely within the 100-year floodplain of White Slough and possibly Bishop Cut. The costs of protecting a power plant from a 100-year event at the Lodi site would be even greater than at the Carson Ice-Generating site (due to the higher predicted level of a 100-year flood at the Lodi site), protection from greater than 100-year events could not be reasonably assured.

1.3 Woodland Site

The Woodland site is located on a 40-acre site approximately ½-half mile south of I-5 and approximately one mile east of County Road 102 (Figure 3 - Use existing figure if available) The site is over 50 miles northwest of the CPP site located off of Gibson Road, outside of the City of Woodland, in Yolo County. The Woodland site is a vacant parcel within the 2,500 acres owned by the City of Woodland, adjacent to the Water Pollution Control Facility (WPCF).

Although the site is located within the boundary of the WPCF and is accessible via existing paved roads, upgrades or reinforcement of the existing roads would likely be required to support heavy load trucks for construction of a power plant. The water table is within a few feet of the surface. Soils are silty clay loams and clays comprised of fine alluvium formed in floodplain basins. The Woodland site is within the 100-year floodplain of Cache Creek and Willow Slough. The 100-year flood depth is 4 feet or greater. It would be necessary to import fill to raise the site above the 100-year floodplain.

Nearby waterways include Cache Creek, approximately one mile north of the property, Willow Slough, approximately 1.5 miles south of the property; and a constructed local drainage way that parallels the west side of the property. The site drains to Cache Creek, which ultimately discharges into the Sacramento River.

The site is zoned Open Space and is disturbed, but currently vacant. Agricultural land lies to the north, south, and east of the site. The land to the west is used for industrial treatment processing (City of Woodland 2002b).

The nearest residential sensitive receptor is a large residential development (Gibson Ranch) located approximately one mile west of the site, immediately west of County Road 102.

The Lodi site is not considered a practicable alternative because the parcel is entirely within the within the 100-year floodplain of Cache Creek and Willow Slough. A power plant at the Woodland site would be subject to flooding from these two water bodies unless protected by fill or levee. Assuming four feet of flooding during a 100-year storm event, a 25-acre power plant at this site would require the import of 160,000 to 200,000 cubic yards of fill to elevate the site and lowest floors to one foot above the 100-year flood elevation. A levee approximately 7 feet or more in height may be appropriate, but would result in site drainage problems. Access would be limited during periods of flooding unless the access roads are raised. The flood risk to the Woodland site is substantially greater than for the proposed CPP. Elevating the plant on four to five feet of fill would protect against 100-year flooding, but there would continue to be a higher risk of damage by larger floods than for the CPP site.

1.4 Alternative Sites - Conclusion

Although SMUD's project purpose could not be achieved by the use of an alternative site, SMUD and CEC staff examined five potential alternative sites as part of the CEC license process. Two potential sites were eliminated because they did not have sufficient space for the proposed power plant and appurtenant structures. The other three potential sites were eliminated due to lack of availability and/or because they were located entirely

within 100-year floodplains. In addition to the very high cost of protecting the proposed facility from a 100-year flood, the flood protection measures (elevated foundation or perimeter berm) may not protect the facility from a greater than 100-year flood. Because of its size, the proposed power plant will be a critical element in SMUD's power supply system and the loss of its generating capacity during a major flood event would pose a significant risk to public safety. For these reasons, SMUD believes that its proposed CPP at the existing Rancho Seco facility is the least damaging practicable alternative within the meaning of the 404(b)(1) Guidelines.

2.0 Project Configurations and Other Minimization Strategies for the CPP

In addition to avoiding impacts where practicable, the 404(b)(1) Guidelines require that applicants minimize unavoidable impacts if possible. SMUD has sought to minimize impacts through the development of least-damaging project configurations and the use of low-impact construction techniques were possible.

2.1 Project Configurations

2.1.1 Power Plant Site

Factors considered in developing the proposed project configuration included avoidance of low ground and FEMA mapped flood areas; proximity to existing features and re-usable equipment on the site, including the switchyard and water supply pipeline; avoidance of the existing photovoltaic generation area and potential photovoltaic expansion area(s); avoidance of Rancho Seco decommissioning activities; suitable access for construction, operation and emergencies; visual impacts; and suitable space for a laydown area. SMUD also consulted with the U.S. Fish & Wildlife Service (USFWS) concerning the environmental impacts of potential project configurations. A large grassy plateau east of the Rancho Seco Plant was eliminated from consideration after USFWS indicated that it supported a large number of vernal pools in a nearly natural state.

In addition, SMUD considered all applicable laws, ordinances, regulations and standards (LORS) and applied these to best engineering practices for the plant layout. Location of potential contaminant sources, including the septic system, chemical storage and

treatment systems were considered. For example, the ammonia tank was located at the northern side of the plant boundary to be as far away from public receptors as possible and ensure compliance with LORS. The cooling towers were located on the east side of the plant because prevailing winds are from west to east. This avoids having cooling towers near existing transmission lines. Moreover, cooling tower chemical storage was placed as close as practicable to the cooling towers to minimize environmental concerns (e.g., leakage from chemical lines).

In the aggregate, these factors required that the power plant be located in close proximity to the existing Rancho Seco nuclear facility, but in a location that would not interfere with the decommissioning of that facility. Furthermore, the location was selected to avoid impacts to wetlands and other waters of the U.S. to the maximum extent practicable. The chosen plant location meets those goals.

2.1.2 Laydown/Parking Areas

In addition to power plant locations, SMUD considered three possible laydown/parking areas: (1) a remote location on the northeast part of the SMUD property (NE1); (2) an area immediately west of the proposed power plant site and north of Clay East Road (W1); and (3) the proposed laydown/parking area immediately south of the power plant site, across Clay East Road (S1).

2.1.2.1 Laydown/Parking Area NE1

NE1 is approximately 1.4 miles by road from the CPP site. If used as a primary laydown/parking area, SMUD would have to institute 24-hour security to guard high-value plant components and incur the cost of moving those materials longer distances and transporting construction personnel at the start of a shift.

Transporting construction personnel would require that SMUD pay wages during queuing, loading, transport and unloading. The hourly cost for construction personnel was estimated at $38 per hour (excluding benefits). The estimated person-months for site personnel are 7,346. Assuming one-half hour each way (i.e., 1 hour per day) to check in, queue and transport construction personnel, the added cost is 7,346 person-months

multiplied by 22 workdays per month. The total is $6,141,256 straight-time dollars (161,612 hours x $38/hr). Assuming that the hour lost in transportation will need to be made up by extending the construction period, the amount should be doubled, for a total salary cost of $12,282,512. If the construction period could not be extended, so that 1 hour of overtime was required to maintain schedule, the amount would be $9.2 million. In addition, some crafts require construction personnel to carry or retrieve special tools from their vehicles, which would add to the cost. Moreover, the cost of transportation and fuel (3 buses and 3 drivers at 4 hours per day) for 48 months is estimated at $800,000.

The project would also incur the cost of sending crews to retrieve materials from laydown, plus additional supervision since there would be no "line-of-sight" from the CPP project to verify safe work practices and procedures. There would also be some logistical loss of productivity that is difficult to estimate. Assuming a materials-retrieval crew includes 2 laborers, one equipment operator and one skilled worker-foreman, the aggregate hourly crew cost is $159.55. Assuming it takes an extra 45 minutes per retrieval, at 10 retrievals per day, the added cost is $1,244,490 for NE1. This does not include the loss of productivity for construction personnel while waiting for material to arrive.

In summary, NE1 would add significant cost to the project, introduce safety risk to workers, extend the workday, and introduce logistics and scheduling problems for the project. Within the criteria of the 404(b)(1) Guidelines, it is not a practicable alternative because of cost and logistics.

2.1.2.2 Laydown/Parking Areas W1 and S1 - Comparison

These two laydown areas are on opposite sides of Clay East Road. Because they are both close enough to the power plant to overcome the cost and logistical problems of NE1, they were compared with each other based on environmental and related criteria.

Biological Resources

W1 is on the west side of a barbed wire fence and paved access road to Rancho Seco. While the area east of the road and S1 were heavily grazed, W1 is not grazed, and has not been grazed in recent years. The field at W1 is dominated by tall (3') annual grass and herbaceous vegetation. There is a thick layer of thatch on the ground under the vegetation, covering nearly all this area with a dense spongy organic substrate. While short brome grasses dominated the project site east of the road, W1 had a much greater amount of rhizomatous grasses with dense thick root systems and higher density of forbs compared to east of the road. Running throughout the thatch layer and lower vegetation were abundant burrows and tunnels, probably of voles (*Microtus*) and pocket gophers (*Thomomys*). A narrow meandering swale crosses W1 from south to north, but it was poorly defined and obscured by the dense vegetation.

Soils on W1 (where exposed) appear less dense, more friable and darker in color. This may be because of a history of less grazing and trampling, or because of a different soil type. Aerial photographs of W1 showed well-defined "pock mark" topography, that appears consistent with mima mounds. Because the vegetation was high and vernal pools were not evident, it isn't possible to define these as mima mounds, but the presence of this feature elsewhere on Rancho Seco (e.g East of Rancho Seco reservoir) is consistent with vernal pools and special status species. Furthermore, some good quality vernal pools are located on W1 (*see* Figure 1) and could be subject to indirect impacts if the laydown area was located entirely on W1.

S1, located south of Clay East Road has been grazed heavily. Dominant vegetation is short brome grass and very short herbaceous vegetation on a compacted reddish soil. In contrast to W1, which had almost no exposed soil, S1 showed a lot of exposed soil. The vegetation and thatch were not dense enough to support substantial voles and except for sparse small burrows, there was little evidence of rodent use. Pocket gophers are probably present, although no gopher mounds were observed during a recent site reconnaissance. The site is crossed by two well-defined swales, each of which retain water where a berm pushed up along the fence line interferes with natural drainage. A

depression that may have hydric characteristics (about 10 feet across) is visible on the north side of a transmission line tower. The presence of old barb wire and debris in the depression, its location adjacent to a raised area supporting the tower, and the lack of plant diversity in this depression suggest it is an artificial excavation, either part of debris burial or excavated to construct the tower. As a wetland it appears highly modified and of poor quality. Further south in S1 there are other small depressions with some hydric characteristics, but relatively small. The swales are seasonally dry.

Overall, S1 is heavily grazed pasture, with sparse annual grass cover and exposed soil. It does not support any unique biological resources or resources of exceptional value. The habitat types, wildlife and special status species supported by this 20-acre area are regionally abundant and represented by areas of much higher quality. Biologically S1 does not appear to support as much biomass in terms of live and dead vegetation, as much rodent use, or have the potential for more extensive wetlands that W1 does. W1 has tall dense vegetation, abundant vole and gophers, some microtopography and poorly defined drainage that implies a more extensive potential for wetland plants and animals.

Soils

As indicated above, the vegetation on W1 is dense and tall, leaving a spongy thatch underneath and what may be a different soil type. This is consistent with soil types listed by USDA and summarized in the AFC. Local mapping shows a border in soil type that runs north-south approximately at the location of the access road. The project site and most of S1 is mapped as "198- Redding Gravelly Loam", while most of W1 is mapped as "125 Corning Complex".

As described in the Soil survey, Redding gravelly loam (S1) is moderately deep, has a medium runoff rate, slight or moderate water erosion hazard, fair revegetation potential and Land Capability of N; IVe. "IVe" connotes very severe limitations requiring careful management and plant selection.

Corning complex (W1) is described as gravelly alluvium that is very deep, with medium runoff rate, moderate to severe water erosion hazard, fair revegetation potential and Land Capability of N; IIIe, I:IIe. IIe connotes arable land with limitations, and IIIe is severely limited arable land with restricted crops.

The soil mapping reported in the AFC was consistent with the observations in the field that W1 appeared to be a deeper, more arable soil, that supported more dense plant growth. It also was more prone to water erosion. Between S1 and W1 it appears that S1 would be less likely to have erosion and restoration problems than W1. W1 appears to have higher "value" for soil uses (Land Use Capability) than S1. This would favor S1 as the preferred laydown area.

Water Quality and Water Resources

Managing stormwater runoff from the laydown area is important to maintaining water quality in Clay Creek and its tributaries. Both W1 and S1 slope generally north to Clay Creek, and both are crossed by one or more seasonal swales that discharge to Clay Creek. Depending on how far north W1 would extend, the edge of the laydown area would be approximately 800 feet from Clay Creek. S1 would be about 2000 feet from the mainstem of Clay Creek and about 500 feet from a major tributary.

Grading and sloping the laydown area would direct drainage from the laydown area at S1 across the project site to the east swale, or north to the stormwater detention pond at the northwest corner of the project site. The pond allows sediment to settle, with adsorbed contaminants, if any, and allows for the capture and control of spills or oily wastes, if any.

W1 is at a lower elevation and would potentially require another detention basin to be constructed to capture and treat off-site runoff. The relatively higher elevation of S1 and distance from Clay Creek make it easier to manage stormwater quality than at W1.

S1 has two ephemeral drainages crossing it, while W1 has only one mapped drainage. The latter is much smaller in area than the two at S1. Based on the size of jurisdictional wetlands as mapped, it would appear that there are fewer wetlands currently verified at W1 than at S1. The drainages in S1 are seasonal and likely to be dry during most of the construction season, and therefore it appears feasible to avoid impacts from off-site runoff. Furthermore, the two swales that cross S1 will need to be modified substantially north of Clay East Road because of the location of the project site. Preserving the swales south of Clay East Road in their current alignment would require something like a 90-degree angle culvert on the north side of Clay East Road. This was considered during the discovery phase of the CEC licensing process. However, extensive discussions with CEC hydrologists indicated that the structures necessary to turn the drainage so abruptly would either be very large, or prone to failure. A more effective means of transitioning the direction of flow around the site would be to modify slightly the alignment of the swales upstream of the project site in the area of S1. Under this option the upstream ends of these seasonal swales would require modification, whether or not the area was to be used as a laydown area. Since the swales would probably need to be modified to allow them to transition gradually around the power plant site, it seems less disruptive to use this area exclusively for laydown and preserve W1 if possible.

Based on wetlands as delineated, it would appear that there might be slightly less effect to wetlands of using W1. However, with S1 drainages modified as planned to provide a smoother (hydrologically successful) transition around the project site, and because S1 is further from the mainstem of Clay Creek, and the use of S1 would allow for adequate water quality control.

Visual Resources

Based on visual simulations presented to the CEC,[5] laydown area W1 would be between the observer and the power plant site, bringing activities at the laydown area closer into the foreground. By contrast, use of S1 would appear to the right (south) of the project site and local topography and vegetation may visually block most of the activities at S1.

[5] *Cosumnes Power Project Application for Certification to CEC*, Figures 8.11-2b, 3b, 4b.

It is not apparent that there is any visual blocking of W1. Therefore with respect to visual resources, it appears there is a benefit to S1 over W1.

Noise

Although activities at the laydown area are not expected to be a major source of noise, the movement of machinery and equipment will generate some potentially loud sounds. As noted for visual resources, W1 would move project activities slightly closer to the nearest receptors (basically west of the project site) than S1. Also as noted in visual resources, local topography may block all or part of sounds generated from S1, while W1 has no intervening topography to reduce noise generation. For noise, there is a slight preference for S1 over W1 as a laydown area.

Summary

SMUD considered three possible alternatives for possible laydown/parking; one at the Rancho Seco Site (NE1), one to the west of the proposed plant site (W1) and another across Clay East Road to the south (S1). NE1 would add significant cost to the project, introduce safety risk to workers, extend the workday, and introduce logistics and scheduling problems for the project. W1 and S1 each support similar resource values and would have similar impacts if used as laydown areas. Based on observations of biological value, potential for erosion, water quality maintenance, visual and noise impacts, SMUD believes there are fewer impacts of using S1 than W1. These findings are summarized in the table that follows.

ATTACHMENT W&SR-148B
Table 1: Comparison of Potential Laydown Areas

	NE1	W1	S1
Location	1.4 miles from CPP.	Immediately west of CPP site, North of Clay East Rd.	Immediately south of CPP site across Clay East Rd..
Cost	Costs would range from $6.9 to $13.1 million more than W1 or S1.	Approximately equal to S1.	Approximately equal to W1.
Biological Resources	Not examined because cost of using this site eliminated it as a practicable alternative.	Tall (3') annual grasses, dense thick root systems, high density of forbs, abundant burrows and tunnels, soils darker in color, less dense and more friable than S1. Fewer delineated wetlands than S1, but good quality vernal pools on western half of parcel.	Heavily grazed, short brome grass, very short herbaceous vegetation, compacted, exposed soil. More delineated wetlands than W1, although quality may be lower.
Soils	Not examined because cost of using this site eliminated it as a practicable alternative.	Higher value for soils uses - spongy thatch - 125 Corning Complex, very deep, medium runoff rate, moderate to severe water erosion hazard, fair revegetation potential, land compatibility of N; IIIe,I:IIe, "IIe" arable land with limitations, "IIIe" severely limited	Less likely to have erosion/restoration problems - 198 - Redding Gravelly Loam, moderately deep, medium runoff rate, slight or moderate erosion hazard, fair revegetation potential, land compatibility N; IVe "IVe" - very severe limitations
Water Quality & Water Resources	Not examined because cost of using this site eliminated it as a practicable alternative.	800 feet from Clay Creek. Would require creation of second detention basin. Fewer delineated wetlands than S1, but good quality vernal pools on western half of parcel.	2000 feet from Clay Creek. Drains to on-site detention basin. Realignment of swales required whether or not S1 is used for laydown. Allows adequate water quality control.
Visual Resources	Not examined because cost of using this site eliminated it as a practicable alternative.	No visual blocking of activities.	Some visual blocking of activities.
Noise	Not examined because cost of using this site eliminated it as a practicable alternative.	Slightly closer to the receptors than S1.	Some intervening topography.
Summary	Not a practicable alternative.	More impacts than S1 on biological value, erosion, water quality maintenance, visual and noise impacts.	Fewer impacts than W1 on biological value, erosion, water quality maintenance, visual and noise impacts.

2.1.3 Natural Gas Pipeline Route

SMUD began to evaluate potential impacts of alternative gas pipeline alignments early in the CPP project, prior to May 2001. SMUD used an approach that considered macro-alignments (east corridor, west corridor) and gradually worked down to the proposed alignment through a series of progressively more detailed investigations of "on-the-ground" resources. (See table __ for a summary of SMUD's environmental evaluation of the pipeline corridor and adjustments to that corridor to reduce impacts on listed species and Waters of the United States.)

2.1.3.1 Macro-Alignments:

Four macro-alignments were considered prior to May 2001. In developing alignments, SMUD engineers followed the policies in ASCE Manual 46 (Manual 46).[6] Manual 46 documents the prerequisites to pipeline selection of rights of way, use of public roads, use of trenchless construction techniques and a balanced consideration of safety, regulatory and environmental considerations. It also describes pipelines as "highly compatible" with grazing and rural undeveloped land uses. They are compatible with dry and irrigated farming and vineyards and will not restrict future uses of these land use types. These were all considerations in developing a pipeline corridor for the CPP project. From this preliminary analysis emerged four general corridors for evaluation.[7]

- Carson Cogen Southwest Corridor (approximately the current proposed)
- Carson Cogen Northeast Corridor(Carson East along Sheldon Road to east of Bradshaw, crossing Deer Creek, the Cosumnes River, Badger creek along the Central Traction Railway, South to Laguna Road, and east on the proposed corridor)
- Proctor & Gamble Southwest Corridor (From the Proctor &Gamble facility southeast along California Traction Railway, east along Florin Road, across Fry

[6] ASCE Manuals and Reports on Engineering Practice No. 46 (1998).

creek, and Laguna Creek, south parallel to the Folsom South Canal, across tailing ponds, across Badger Creek, across four forks of Laguna Creek, Hadselville Creek and along Twin Cities Road to Rancho Seco).

- Proctor & Gamble Southeast Corridor (From Proctor & Gamble Southeast along the California Traction Railroad, cross north fork Laguna Creek, North Fork Deer Creek, Deer Creek, Cosumnes River, north fork Badger, Badger and Laguna before following Twin Cities Road to the site.

SMUD compared these four routes based on whether biological impacts could be avoided completely, whether they could be mitigated, or whether they could not be mitigated. SMUD also considered the number of waterway crossings; the types of habitat potentially present (Swainson's hawk foraging habitat, giant garter snake habitat, vernal pools, fallow farm fields, etc.) and the quality of habitats affected.

Crossing the Cosumnes River, Badger Creek and Laguna Creek is inevitable for any of the alignments. Therefore, SMUD preferred the crossing that involved the shortest distance of riparian and wetland vegetation and the fewest effects on the diverse resources. The upstream portions of these rivers spread out into multiple dendritic drainages and tributaries. The more eastern alignments (Proctor & Gamble [both Southwest and Southest or just Southeast?] and Carson Cogen Northeast) crossed Deer Creek, multiple tributaries of Laguna Creek, Cosumnes River, Badger Creek, and Hadselville Creek. The southern alignment crosses a relatively narrow and channelized portion of the Cosumnes, Badger and Laguna Creeks. Therefore, SMUD considered the southwest corridor [only one? Identify as the Carson Sogen Southwest corridor if only one?] environmentally superior.

There are several special status species that occur throughout Sacramento County that would potentially be affected by any pipeline corridor. Generally these species are Swainson's hawk, giant garter snake, and vernal pool fairy shrimp. Vernal pools also

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[7] Routing studies to the Lodi and Woodland sites discussed in Section 1.0 were not conducted because those locations were completely within 100-year floodplains and, therefore, not considered

support some listed plant species. None of the alignments could avoid impacts to all these species. Using the California Natural Diversity Database (CNDDB), it is evident that there are generally more Swainson's hawks, fairy shrimp and giant garter snake locations on the east side of Highway 99 and in the upper reaches of the Cosumnes, Deer Creek, Badger and Laguna Creek Drainages. There are generally fewer recorded localities for listed species in the southwest corridors. Therefore the potential for conflict with endangered species is likely to be lower in the west corridor [Only one? If so, identify as the Carson Cogen Southwest corridor] than the eastern corridors.

2.1.3.2 Modifying the Macro-Alignment to Avoid "Fatal Flaw" Resources

Evaluation of the macro-alignments pointed to the Carson Cogen Southwest corridor as having the least environmental impacts on listed species and Waters of the United States. Next, SMUD evaluated the Carson Cogen southwest corridor for presence of any unmitigatable impacts, or alignment changes that would reduce impacts to specific resources. Using aerial photographs acquired by Sacramento County, SMUD tasked Ellyn Davis Environmental Consulting to identify waters, wetlands, marshes, riparian forests, large oak trees, and preserves along the general alignment. The pipeline consultant (Blue Flame, Inc.) then worked on moving the alignment within the general corridor to minimize areas of biological sensitivity.

Throughout the length of the proposed alignment SMUD made an effort to move the alignment into areas that were already disturbed and close to existing roads and roadbeds on private property, existing rights of way or areas that are likely to be developed in the future. For example, there is a proposal to locate a large sewer line between Carson Cogeneration and Core Road, that would run roughly parallel to the railroad on the west side. Because this project can be reasonably anticipated to occur, SMUD proposed to place the gas pipeline in or close to the same area that would likely be modified for the pipeline. Siting the gas pipeline close to roads also minimizes the extent to which sensitive habitat or open lands would be modified for construction or maintenance access roads.

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practicable alternatives for a power plant under the 404(b)(1) Guidelines.

This evaluation also screened the alignments for any "fatal flaws" such as a unique resource, preserve or similar land use that is fully protected. No "fatal flaws" were identified along the Carson Cogen Southwest corridor.

The proposed alignment passes through two important refuge/ preserve areas: the Cosumnes River Preserve operated by the Nature Conservancy, and the Stone Lakes Laguna Wetland Mitigation Bank, operated by Foothill Associates. SMUD met with the Nature Conservancy to determine an alignment that would minimize adverse impacts on Preserve resources and proposed that alignment to the CEC.

SMUD proposed the gas line alignment within a 35-foot-wide section on the far east edge of the Laguna Mitigation Bank, where only one vernal pool would be directly affected and where the proposed sewer interceptor construction would (if approved) disturb the area. Constructed vernal pools in this area are further west and would be largely avoided by a pipeline close to the eastern property line. There is also a compacted dirt track on this alignment that may be used for seasonal access for inspections or maintenance.

2.1.3.3 Micro-Alignment Of The Natural Gas Pipeline

Once SMUD selected the macro-alignment, SMUD engineers began refining it based on environmental and engineering constraints. Field surveys for wetlands, burrowing owls, rare plants and Swainson's hawks were performed. SMUD initialed informal consultations based on the macro-alignment with the United States Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), National Marine Fisheries Service (NMFS) and Corps. SMUD requested that agencies provide early review and feedback on their concerns for permittability of the alignment. The micro-alignment changes that occurred as a result are of 3 general types:

- Selective corridor minimization (narrowing the corridor) in strategic locations to avoid local resources.

- Major re-alignments (Franklin Boulevard and Nature Conservancy Property north of Arno Road).
- Specifying trenchless construction methods in sensitive locations

2.1.3.4 Selective Corridor Minimization

There are several locations where wetland features, trees or elderberry shrubs occur adjacent or parallel to the proposed construction alignment (e.g. between Sims Road and Laguna Boulevard). For short segments, the construction corridor can be narrowed to 35 feet to avoid features that are adjacent to the alignment. Locations where this is appropriate were marked on project maps and design drawings to avoid direct impacts. The pipeline construction corridor is typically 65 feet wide, with some locations as wide as 100 feet to allow for assembly and laydown of pipe strings (near HDDs), or for HDD launch or retrieval sites. Locations where the corridor has been narrowed are readily apparent on project drawings where a width less than 65 feet is shown.

2.1.3.5 Franklin Road And Conservancy Realignments

The USFWS and CEC staff expressed concern about the pipeline crossing the Stone Lakes Laguna Mitigation Area, noting that the long-term plan is for this area to be transferred to the Stone Lakes Refuge. USFWS and CEC staff felt a pipeline was not consistent with the goals of the refuge. At this time, the Mitigation Area has not been transferred to the refuge and is managed by a private company. USFWS and CEC staff preferred to route the gas pipeline down Franklin Boulevard instead of crossing the potential future refuge.

SMUD complied with the agency request modifying the proposed alignment to the Franklin Road Alternative.

Staff from the Nature Conservancy met with SMUD biologists during a field survey and expressed concern for a known (but unrecorded) locality of rare plant species in a vernal pool complex east of Highway 99 and north of Arno Road. In response, SMUD agreed to revise the alignment in this area to run on the south side of Arno Road. The area between

the road and residences on the south side comprises pastures for a small feedlot, and the pipeline would cause relatively little disruption to the operation, presuming an agreement could be reached with the landowner.

2.1.3.6 Specifying Trenchless Methods In Sensitive Areas

To avoid potential impacts to the sensitive riparian and wetland area around the Cosumnes River, SMUD had assumed from the outset that trenchless technology such as Horizontal Directional Drilling (HDD) or jack and bore would be used to cross major rivers or sensitive areas. As additional field surveys identified areas of concern, several other trenchless construction areas were designated.

Badger Creek Backwater: This location south of the Cosumnes River and west of Highway 99 is a known site for the federal threatened giant garter snake. Access to this area is poor and the width of available construction corridor very narrow. After consideration of cost and design alternatives, SMUD determined that there would be less potential for environmental harm, and more efficiency to construct this crossing with HDD.

Arno Road and Highway 99: As originally designed, Highway 99 would require a jack and bore emerge on the east side of Highway 99 north of Arno Road. Vernal pools on both sides of a narrow paved road (abandoned) create a highly constrained construction alignment. SMUD determined that this area could be bored from west of Highway 99 to south of Arno Road, avoiding the area entirely (pending agreement by Caltrans).

Willow Creek Bore, south of Valensin Road: Valensin road crosses a narrow section of excavated side-ditch to Willow Creek, that supports a dense growth of blackberries. Willow Creek discharges to Badger Creek, and because of irrigation delivery and returns is rarely dry. SMUD originally proposed open trenching

through this area, but upon determining the site is potential habitat for the federal threatened giant garter snake, determined to use trenchless methods to cross this site.

Laguna Creek, west of Laguna Road: This portion of the alignment follows a dirt road that connects Valensin Road to the west with Laguna Road to the East. The dirt road is on private property and crosses Laguna creek in a gravel bar that in summer ranges from 2 to 6 inches deep. Tire tracks indicate the location is an infrequently used ford. It would be less time consuming and expensive for SMUD to cross this area using coffer dams and open trench methods. However, concerns for water quality and biota raised by CEC staff indicated that it would be preferable to cross this by trenchless methods, to which SMUD agreed.

3.0 Conclusion

Based on the factors outlined above, SMUD believes the proposed CPP is the least damaging practicable alternative, as that term is defined in the 404(b)(1) Guidelines. The selected power plant site was the only alternative that allowed the facility to be constructed outside a 100-year floodplain, and the selected laydown/parking area minimizes environmental impacts through avoidance of wetlands where possible. Moreover, the selected pipeline route will result in temporary impacts, while avoiding direct impacts along the right-of-way to streams and the Cosumnes River and associated nature preserve by using jack-and-bore or horizontal directional drilling at those locations.

Figure 1: Vernal pool near area W1. (May 2, 2003)